**ORDER NO. DSC0503007C0**
**B26**

**Digital Camera**

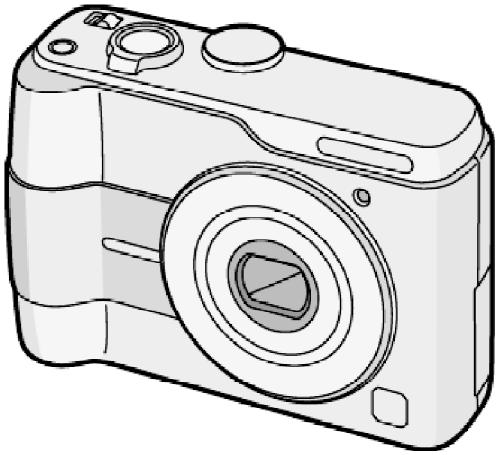
LUMIX

# DMC-LS1PP / DMC-LS1PL / DMC-LS1EB / DMC-LS1EG / DMC-LS1EGM / DMC-LS1GC / DMC-LS1GK / DMC-LS1GN / DMC-LS1GT / DMC-LS1SG

**Vol. 1**
**Colour**
**(S).....Silver Type**
**(A).....Blue Type (GC and GK only)**
**(T).....Brown Type (GC only)**



PDF created with pdfFactory Pro trial version www.pdffactory.com



## SPECIFICATIONS



PDF created with pdfFactory Pro trial version www.pdffactory.com

PDF created with pdfFactory Pro trial version www.pdffactory.com

**© 2005 Matsushita Electric Industrial Co., Ltd. All rights reserved.**
**Unauthorized copying and distribution is a violation of law.**



PDF created with pdfFactory Pro trial version www.pdffactory.com

Panasonic

# 1. INTRODUCTION

## 1.1. INTRODUCTION

**This service manual contains technical information, which allow service personnel's to understand and service this model.**
**Please place orders using the parts list and not the drawing reference numbers.**
**If the circuit is changed or modified, the information will be followed by service manual to be controlled with original service manual.**

## 1.2. ABOUT LEAD FREE SOLDER (PbF)

**Distinction of PbF PCB:**
**PCBs (manufactured) using lead free solder will have a PbF stamp on the PCB.**

**Caution:**

**- Pb free solder has a higher melting point than standard solder, Typically the melting point is 50-70°F (30-40°C) higher. Please use a high temperature soldering iron. In case of soldering iron with temperature control, please set it to 700±20°F (370±10°C)**
**- Pb free solder will tend to splash when heated too high (about 1100°F/600°C).**

**When soldering or unsoldering, please completely remove all of the solder on the pins or solder area, and be sure to heat the soldering points with the Pb free solder until it melts enough.**

## 1.3. IMPORTANT NOTICE 1: (Other than U.S.A. and Canadian Market)

**1. The service manual does not contain the following information,**



PDF created with pdfFactory Pro trial version www.pdffactory.com

**because of the impossibility of servicing at component level.**

**A. Schematic diagram, Block Diagram and C.B.A. layout of Main C.B.A.**

**B. Parts list for individual parts of Main C.B.A.**

**When a part replacement is required for repairing Main C.B.A., replace as an assembled parts. (Main C.B.A.)**

**2. The following category is/are recycle module part. please send it/ them to Central Repair Center.**

**- MAIN C.B.A. (VEP56021A) : Excluding replacement of Lithium Battery**

## 1.4. HOW TO DEFINE THE MODEL SUFFIX (NTSC or PAL model)

**There are six kinds of DMC-LS1, regardless of the colours.**

**- DMC-LS1S**
**- DMC-LS1PP**
**- DMC-LS1EB/EG/EGM/GN**
**- DMC-LS1GC/SG**
**- DMC-LS1GT**
**- DMC-LS1PL/GK**

**(DMC-LS1S is exclusively Japan domestic model.)**

**What is the difference is that the “INITIAL SETTING” data which is stored in Flash ROM mounted on Main C.B.A.**

### 1.4.1. Defining methods:

**To define the model suffix to be serviced, refer to the nameplate which is putted on the bottom side of the Unit.**



PDF created with pdfFactory Pro trial version www.pdffactory.com

**a) DMC-LS1S**
DMC-LS1S is exclusively Japan domestic model.

**b) DMC-LS1PP**
The nameplate for this model show the following Safty registration mark.

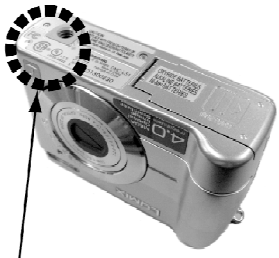
**c) DMC-LS1EB/EG/EGM/GN**
The nameplate for these models show the following Safty registration mark.

**d) DMC-LS1GC/SG**
The nameplate for these models show the following Safty registration mark.

**e) DMC-LS1GT**
The nameplate for this model show the following Safty registration mark.

D31221

**f) DMC-LS1PL/GK**
The nameplate for these models do not show any above Safty registration mark.




**NOTE:**

**After replacing the MAIN C.B.A., be sure to achieve adjustment. The adjustment instruction is available at "software download" on the "CS-Web from AVC" web-site in "TSN system".**

### 1.4.2. INITIAL SETTINGS:

**When you replace the Main C.B.A., be sure to perform the initial settings after achieving the Adjustment, by ordering the following procedure in accordance with model suffix.**

**- Step 1. The temporary cancellation of factory setting:**
**Set the mode dial to " [Normal Picture] (Red camera mark)". While keep pressing [Optical Image Stabilizer] and " [UP] of Cross key" simultaneously, turn the Power on.**

**- Step 2. The cancellation of factory setting:**
**Set the mode dial to " [Playback] ". While keep pressing [Optical Image Stabilizer] and " [UP] of Cross key" simultaneously, turn the Power off.**

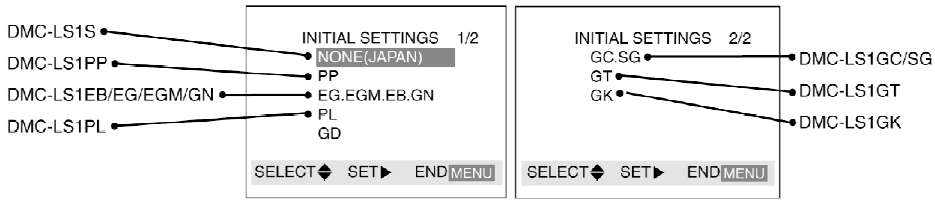
**- Step 3. Turn the Power on:**
**Set the mode dial to " [Normal Picture] (Red camera mark)", and then turn the Power on.**

**- Step 4. Display the INITIAL SETTING:**



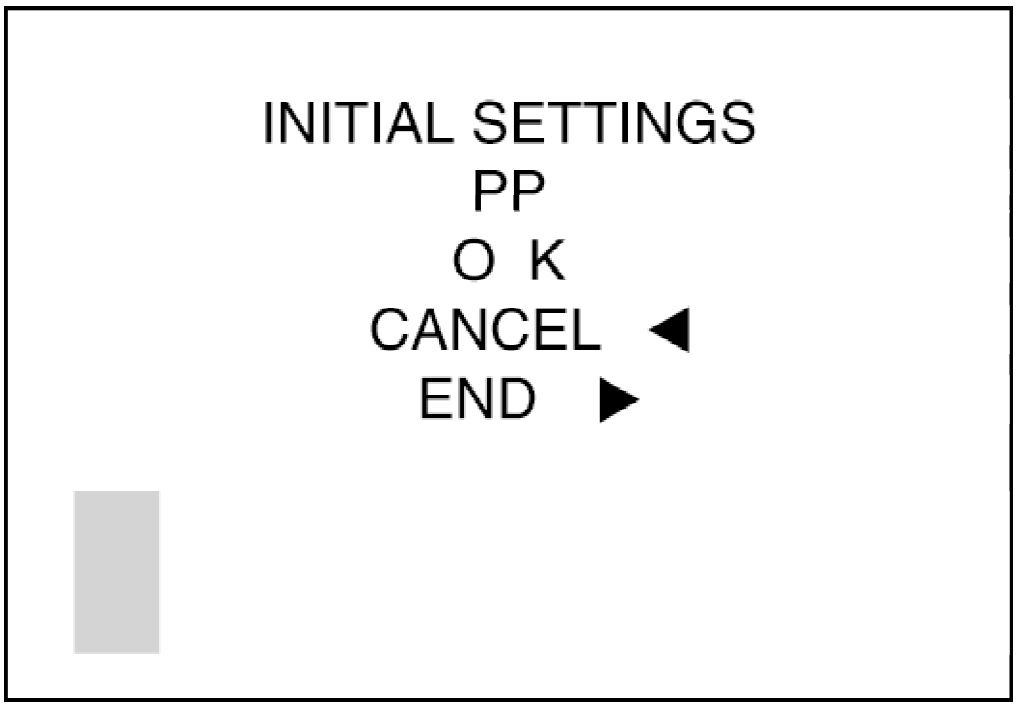
PDF created with pdfFactory Pro trial version www.pdffactory.com

**While keep pressing [MENU] and " [RIGHT] of Cross key" simultaneously, turn the Power off.**




**- Step 5. Set the INITIAL SETTING:**

**Select the area with pressing " [UP] / [DOWN] of Cross key", and then press the " [RIGHT] of Cross key".**




**The only set area is displayed, and then press the " [RIGHT] of Cross key" after confirmation. (The unit is powered off automatically.)**

**Confirm the display of "PLEASE SET THE CLOCK" in English when the unit is turned on again. / (For China and Taiwan market, the display shows "PLEASE SET THE CLOCK" in Chinese.)**

**- NOTE:**

**The display shows "SET THE CLOCK" when turn the Power on again.**

**Connect the unit to PC with USB cable and is detected as removable media.**

**1) As for your reference Default setting condition is given in the following table.**



PDF created with pdfFactory Pro trial version www.pdffactory.com

**- Default setting (After “INITIAL SETTINGS”)**

| | MODEL | VIDEO OUTPUT | LANGUAGE | DATE | REMARKS |
|---|---|---|---|---|---|
| a) | DMC-LS1S | NTSC | Japanese | Year/Month/Date | |
| b) | DMC-LS1PP/PL | NTSC | English | Month/Date/Year | |
| c) | DMC-LS1EB/EG/EGM/GC/GN/SG | PAL | English | Date/Month/Year | |
| d) | DMC-LS1GK | PAL | Chinese (simplified) | Year/Month/Date | |
| e) | DMC-LS1GT | NTSC | Chinese (traditional) | Year/Month/Date | |

# 2. SAFETY PRECAUTIONS

## 2.1. GENERAL GUIDELINES

1. **IMPORTANT SAFETY NOTICE**
   **There are special components used in this equipment which are important for safety. These parts are marked by ⚠ in the Schematic Diagrams, Circuit Board Layout, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer’s specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design without permission of manufacturer.**
2. **An Isolation Transformer should always be used during the servicing of AC Adaptor whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect AC Adaptor from being damaged by accidental shorting that may occur during servicing.**
3. **When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.**
4. **After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.**
5. **After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.**



PDF created with pdfFactory Pro trial version www.pdffactory.com

## 2.2. LEAKAGE CURRENT COLD CHECK

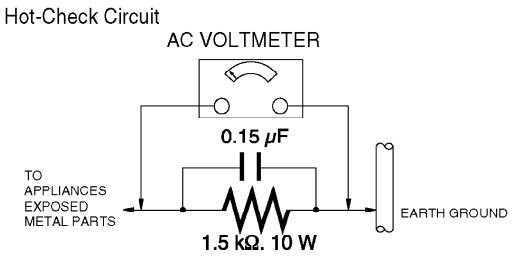
1. **Unplug the AC cord and connect a jumper between the two prongs on the plug.**
2. **Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 1 M Ω and 5.2 M Ω . When the exposed metal does not have a return path to the chassis, the reading must be infinity.**

## 2.3. LEAKAGE CURRENT HOT CHECK (See Figure 1.)

1. **Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.**
2. **Connect a 1.5 k Ω , 10 W resistor, in parallel with a 0.15 μ F capacitor, between each exposed metallic part on the set and a good earth ground, as shown in Figure 1.**
3. **Use an AC voltmeter, with 1 k Ω /V or more sensitivity, to measure the potential across the resistor.**
4. **Check each exposed metallic part, and measure the voltage at each point.**
5. **Reverse the AC plug in the AC outlet and repeat each of the above measurements.**
6. **The potential at any point should not exceed 0.75 V RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 mA. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.**



PDF created with pdfFactory Pro trial version www.pdffactory.com




# 3. PREVENTION OF ELECTRO STATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

**Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).**

1. **Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.**
2. **After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.**
3. **Use only a grounded-tip soldering iron to solder or unsolder ES devices.**
4. **Use only an antistatic solder removal device. Some solder removal devices not classified as "antistatic (ESD protected)" can generate electrical charge sufficient to damage ES devices.**
5. **Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.**
6. **Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).**



PDF created with pdfFactory Pro trial version www.pdffactory.com

7. **Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.**

   **CAUTION :**

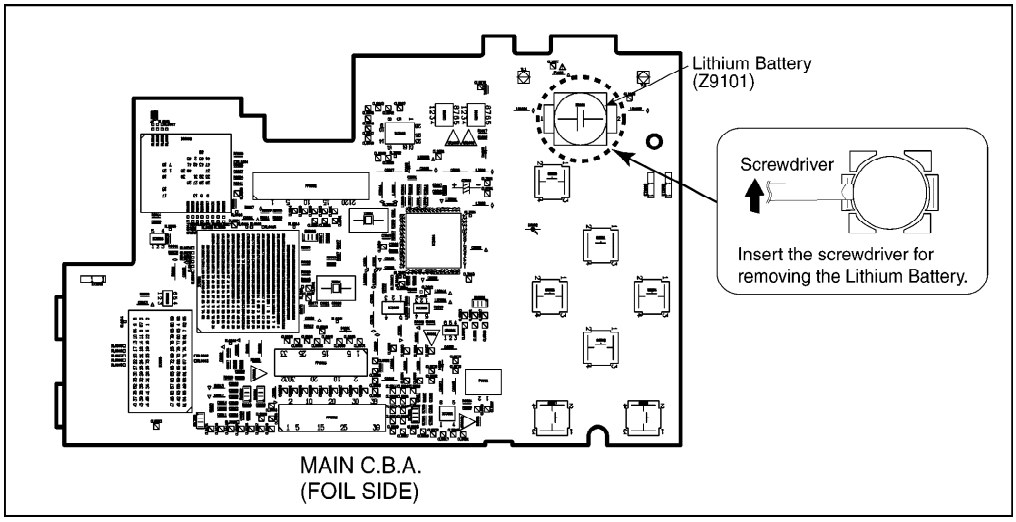
   **Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.**

8. **Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).**

# 4. HOW TO REPLACE THE LITHIUM BATTERY

## 4.1. REPLACEMENT PROCEDURE

1. **Remove the MAIN C.B.A. (Refer to Disassembly Procedures.)**
2. **Remove the Lithium battery (Ref. No. “Z9101” at foil side of MAIN C.B.A.) and then replace it into new one.**




**NOTE:**

**This Lithium battery is a critical component. / (Type No.: ML-614S/ ZT Manufactured by Matsushita Battery Industrial Co.,Ltd.)**
**It must never be subjected to excessive heat or discharge.**
**It must therefore only be fitted in requirement designed specifically for its use.**



PDF created with pdfFactory Pro trial version www.pdffactory.com

**Replacement batteries must be of same type and manufacture.**
**They must be fitted in the same manner and location as the original battery, with the correct polarity contacts observed.**
**Do not attempt to re-charge the old battery or re-use it for any other purpose.**
**It should be disposed of in waste products destined for burial rather than incineration.**

**(For English)**

**CAUTION**

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer's instructions.

**(For French)**

**PRECAUTION**

Le fait de remplacer incorrectement la pile peut présenter des risques d'explosion.
Remplacer la pile uniquement par une pile identique ou de type équivalent recommandée par le fabricant. Se débarrasser des piles usagées conformément aux instructions du fabricant.

**(For German)**

**VORSICHT**

Bei einer falsch eingesetzten Batterie besteht Explosionsgefahr. Nur mit einer vom Hersteller empfohlenen Batterie vom gleichen Typ ersetzen.
Verbrauchte Battrien beim Fachhändler oder einer Sammelstelle für Sonderstoffe abliefern.

**(For Swedish)**

**VARNING**

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattilverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

**(For Norwegian)**

**ADVARSEL!**

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning má kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tibage til leverandøren.

**(For Finnish)**

**VAROITUS**

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

**NOTE:**
**Above caution are also applicable for below batteries which is for DMC-LS1 all series, as well.**

## 1. AA Oxyride batteries

## 2. AA Alkaline batteries

## 3. AA Rechargeable Ni-MH (nickel-metal hydride) batteries

# 5. OPERATING GUIDE



PDF created with pdfFactory Pro trial version www.pdffactory.com

# 6. SERVICE NOTES

## 6.1. WHEN REPLACING THE MAIN C.B.A.

**After replacing the MAIN C.B.A., be sure to achieve adjustment.**
**The adjustment instruction is available at “software download” on the “CS-Web from AVC” web-site in “TSN system”, together with Maintenance software.**

## 6.2. SERVICE POSITION

**This Service Position is used for checking and replacing parts. Use the following Extension cables for servicing.**

**Table S1 Extension Cable List**

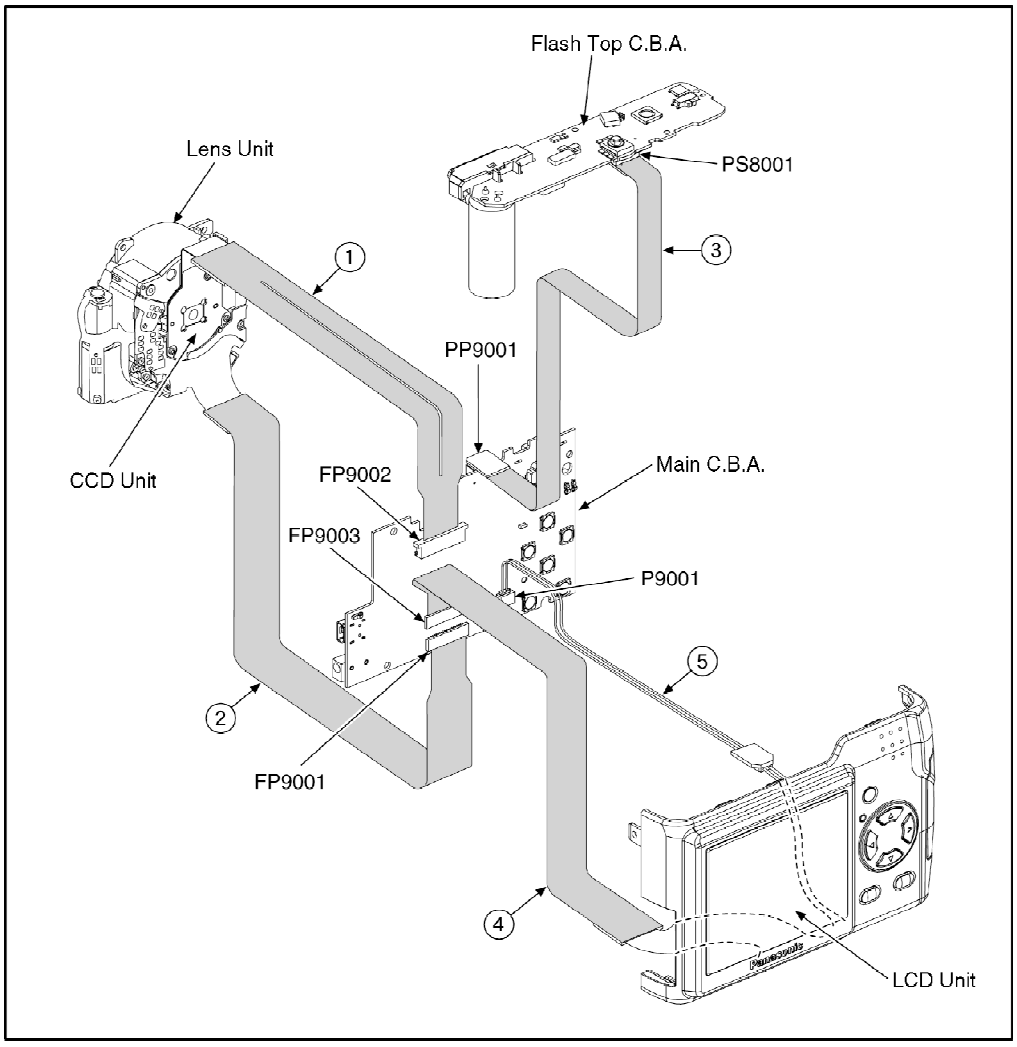
| No. | Parts No. | Connection | Form |
|---|---|---|---|
| 1 | VFK1582A2125 | FP9002 (MAIN) - CCD UNIT | 21PIN 0.5 FFC |
| 2 | VFK1951 | FP9001 (MAIN) - LENS UNIT | 39PIN 0.3 FFC |
| 3 | VFK1870 | PP9001 (MAIN) - PS8001 (FLASH TOP) | 30PIN B to B |
| 4 | VFK1950 | FP9003 (MAIN) - LCD UNIT | 33PIN 0.3 FFC |
| 5 | VFK1576DC202 | P9001 (MAIN) - LCD BACKLIGHT | 2PIN CABLE |

**NOTE:**

**- When the Main C.B.A. is energized, be sure to connect the LCD backlight connector (P9001) to the Main C.B.A..**
**If the Main C.B.A. is energized that the LCD backlight connector (P9001) is opened, it may be caused to the case not only the power does not turn on but also transisitor (Q1070) is broken.**



PDF created with pdfFactory Pro trial version www.pdffactory.com




**CAUTION**

**1. Be sure to discharge the capacitor for flash, which is connected with FLASH TOP C.B.A. / (Refer to "HOW TO DISCHARGE THE CHARGING CAPACITOR ON FLASH TOP C.B.A.".)**

## 6.3. HOW TO DISCHARGE THE CAPACITOR ON FLASH TOP C.B.A.

**CAUTION:**

**1. Be sure to discharge the capacitor on FLASH TOP C.B.A..**

**2. Be careful of the high voltage circuit on FLASH TOP C.B.A. when servicing.**

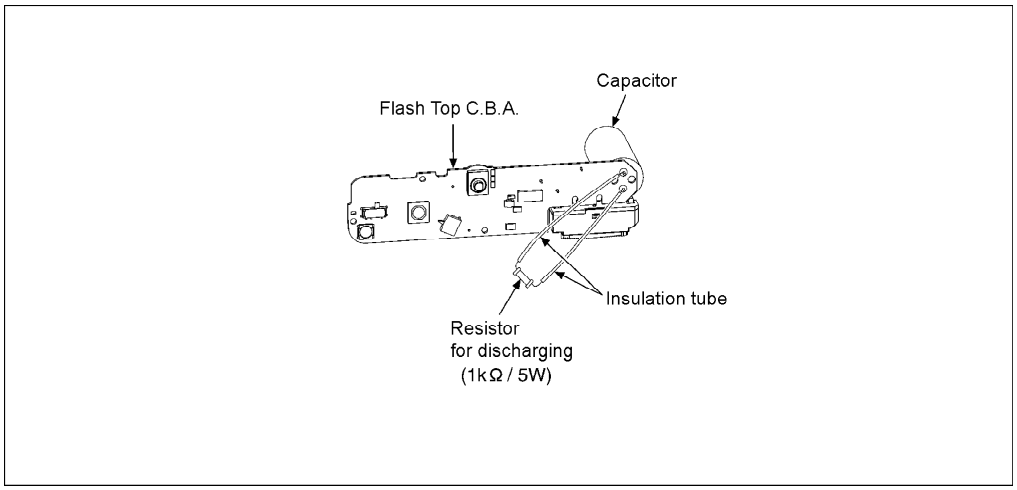
**[Discharging Procedure]**

**1. Refer to the disassemble procedure and Remove the necessary parts/unit.**



PDF created with pdfFactory Pro trial version www.pdffactory.com

2. **Put the insulation tube onto the lead part of Resistor (ERG5SJ102: 1k Ω /5W).**
   **(an equivalent type of resistor may be used.)**
3. **Put the resistor between both terminals of capacitor on FLASH TOP C.B.A. for approx. 5 seconds.**
4. **After discharging, confirm that the capacitor voltage is lower than 10V using a voltmeter.**




## 6.4. CLEANING LENS AND LCD PANEL

**Do not touch the surface of lens and LCD Panel with your hand.**
**When cleaning the lens, use air-Blower to blow off the dust.**
**When cleaning the LCD Panel, dampen the lens cleaning paper with lens cleaner, and the gently wipe the their surface.**

**Note:**
**A lens cleaning paper and lens cleaner are available at local camera shops and market place.**

# 7. ADJUSTMENT PROCEDURES

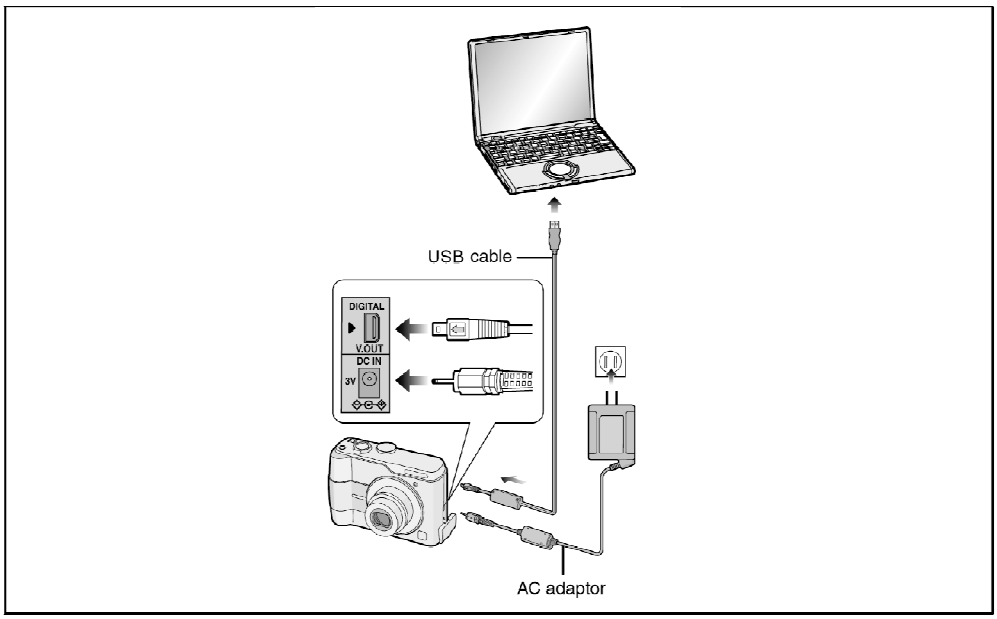
**Even if the MAIN C.B.A. is replaced as a unit, it must be achieved the adjustment and factory setting. The adjustment in this unit is separated two types as shown below.**
**The adjustment instruction is available at "Software download" on the CS-Web from AVC" web-site in "TSN System".**

1. **Main unit adjustment: All adjustments except for LCD adjustment. This unit mounts the adjustment software for main unit, it wouldn't need the connection between the PC and this unit with USB cable.**
2. **LCD adjustment: Adjustment for LCD.**



PDF created with pdfFactory Pro trial version www.pdffactory.com

**It need the connection between the PC and this unit with USB cable.**
**The adjustment instruction is available at "Software download" on the CS-Web from AVC" web-site in "TSN System", together with maintenance software.**

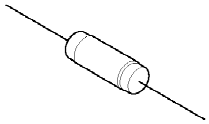
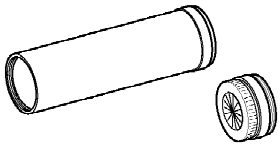
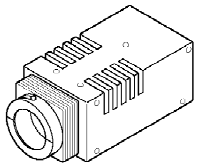
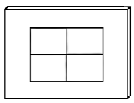
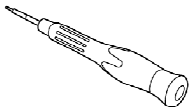



## 7.1. SERVICE FIXTURE AND TOOLS

**The following Service Fixture and tools are used for checking and servicing this unit.**



PDF created with pdfFactory Pro trial version www.pdffactory.com

| | | |
|---|---|---|
| Resistor for Discharging<br>ERG5SJ102 | Infinity Lens (with Focus Chart)<br>VFK1164TCM02 | LIGHT BOX<br>VFK1164TDVLB |
|  <br>An equivalent type of Resistor may be used. |  |  |
| TR Chart<br>VFK1949 | Lens Cleaning Kit (BK)<br>VFK1900BK | T3 Trox Driver<br>VFK1755 |
|  | <br>* Only supplied as 10 set/box. |  |
| Grease (for lens)<br>VFK1829 | Furoyl grease (for focus motor)<br>VFK1850 | |
| | | |

# 8. ERROR CODE MEMORY FUNCTION

## 1. General description

**This unit is equipped with history of error code memory function, and can be memorized 32 error codes in sequence from the latest. When the error is occurred more than 32, oldest error is overwritten in sequence.**

**The error code is not memorized when the power supply is shut down forcibly (when the unit is powered on by the battery, the battery is pulled out) because the error code is memorized to FLASH ROM when the unit is powered off.**

## 2. How to display

**The error code can be displayed by the following procedure:**

**Before perform the error code memory function, connect the AC adaptor or insert the battery.**

**Since this unit has built-in memory, this error code memory function can be performed without inserting SD card.**

**- 1. The temporary cancellation of factory setting:**

**Set the mode dial to “ [Normal Picture] (Red camera mark)”.**



PDF created with pdfFactory Pro trial version www.pdffactory.com

**While keep pressing [Optical Image Stabilizer] and " [UP] of Cross key" simultaneously and hold them, turn the Power on.**

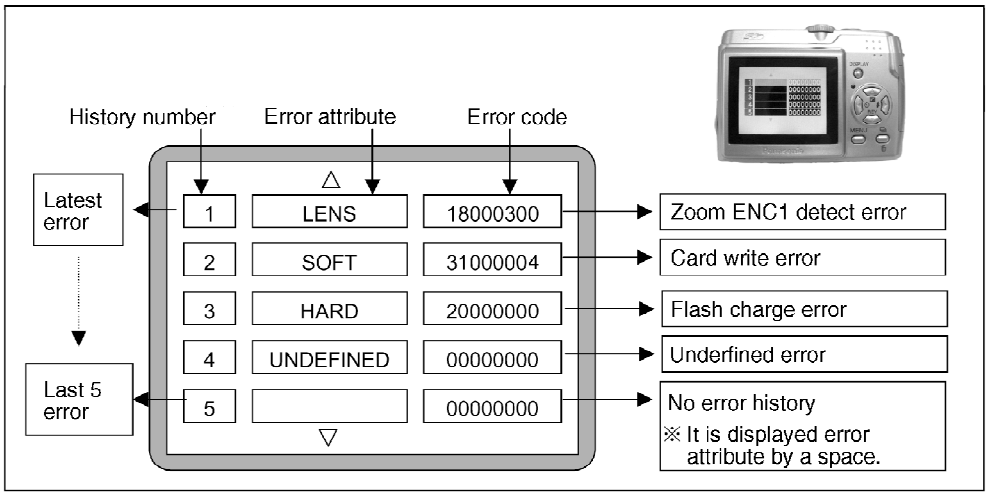
**- 2. The display of error code:**

**Press [Optical Image Stabilizer] , [MENU] and " [LEFT] of Cross key" simultaneously with the step 1 condition.**

**The display is changed as shown below when the above buttons is pressed simultaneously.**

**Normal display → Error code display → Operation history display → Normal display → .....**

**Example of Error Code Display**




**- 3. The change of display:**

**The error code can be memorized 32 error codes in sequence, however it is displayed 5 errors on the LCD.**

**Display can be changed by the following procedure:**

**" [UP] or [DOWN] of Cross key": It can be scroll up or down one.**

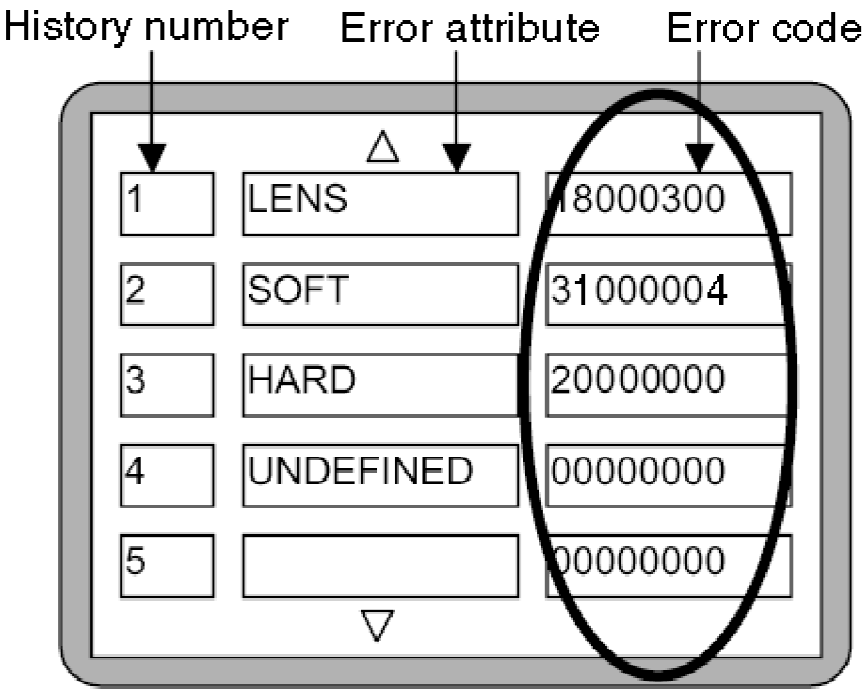
**" [LEFT] or [RIGHT] of Cross key": It can be display last 5 error or another 5 error.**

**- 4. How to read the error code:**

**One error code is displayed for 8 bit, the contents of error codes is indicated the table as shown below.**



PDF created with pdfFactory Pro trial version www.pdffactory.com






PDF created with pdfFactory Pro trial version www.pdffactory.com

| Attribute | Main item | Sub item | Error code | | Contents (Upper) |
|---|---|---|---|---|---|
| | | | High 4 bits | Low 4 bits | Check point (Lower) |
| LENS | Lens drive | OIS | 1800 | 1000 | PSD (X) error. Hall element (X axis) position error in OIS unit. |
| | | | | | OIS Unit |
| | | | | 2000 | PSD (Y) error. Hall element (Y axis) position error in OIS unit. |
| | | | | | OIS Unit |
| | | | | 3000 | GYRO (X) error. Gyro (IC7102: X axis) detect Main C.B.A.. |
| | | | | | IC7102 (Gyro element) or IC6001 (VENUS PL |
| | | | | 4000 | GYRO (Y) error. Gyro (IC7101: Y axis) detect Main C.B.A.. |
| | | | | | IC7101 (Gyro element) or IC6001 (VENUS PL |
| | | | | 5000 | MREF error (Reference voltage error). |
| | | | | | IC7002 (LENS drive) or IC6001 (VENUS PLUS |
| | | | | 6000 | Drive voltage (X) error. |
| | | | | | VENUS PLUS AD value error, LENS Unit, LE breaks etc. |
| | | | | 7000 | Drive voltage (Y) error. |
| | | | | | VENUS PLUS AD value error, LENS Unit, LE breaks etc. |
| | | C.B./Zoom | | 0100 | HP Low detect error (C.B. encoder (full retra always Low detect). |
| | | | | | FP9001-(23) signal line or IC6001 (VENUS PL |
| | | | | 0200 | HP High detect error (C.B. encoder (full retra always High detect). |
| | | | | | FP9001-(23) signal line or IC6001 (VENUS PL |
| | | | | 0300 | ENC1 detect error (C.B. motor encoder detec |
| | | | | | FP9001-(3) signal line or IC6001 (VENUS PLU |
| | | | | 0400 | ENC2 detect error (C.B. motor encoder detec |
| | | | | | FP9001-(5) signal line or IC6001 (VENUS PLU |
| | | Zoom | | 0010 | HP Low detect error (Zoom encoder always detect error). |
| | | | | | FP9001-(3, 5) signal line or IC6001 (VENUS P |
| | | | | 0020 | HP High detect error (Zoom encoder always detect error). |
| | | | | | FP9001-(3, 5) signal line or IC6001 (VENUS P |
| | | | | 0030 | ENC1 detect error (Zoom encoder detect err |
| | | | | | FP9001-(3) signal line or IC6001 (VENUS PLU |
| | | | | 0040 | ENC2 detect error (Zoom encoder detect err |
| | | | | | FP9001-(5) signal line or IC6001 (VENUS PLU |
| | | Focus | | 0001 | HP Low detect error (Focus encoder always detect error). |
| | | | | | FP9001-(23) signal line or IC6001 (VENUS PL |
| | | | | 0002 | HP High detect error (Focus encoder always |



PDF created with pdfFactory Pro trial version www.pdffactory.com

| | | | | | |
|---|---|---|---|---|---|
| | | | | | detect error). |
| | | | | | FP9001-(23) signal line or IC6001 (VENUS PL |
| | | Lens | 1801 | 0000 | Power ON time out error. |
| | | | | | Lens drive system |
| | | | 1802 | 0000 | Power OFF time out error. |
| | | | | | Lens drive system |
| | Adj.History | OIS | 1900 | 2000 | OIS adj. Yaw direction amplitude error (smal |
| | | | | 3000 | OIS adj. Pit direction amplitude error (small) |
| | | | | 4000 | OIS adj. Yaw direction amplitude error (large |
| | | | | 5000 | OIS adj. Pit direction amplitude error (large) |
| | | | | 6000 | OIS adj. MREF error |
| | | | | 7000 | OIS adj. time out error |
| | | | | 8000 | OIS adj. Yaw direction off set error |
| | | | | 9000 | OIS adj. Pit direction off set error |
| | | | | A000 | OIS adj. Yaw direction gain error |
| | | | | B000 | OIS adj. Pit direction gain error |
| | | | | C000 | OIS adj. Yaw direction position sensor error |
| | | | | D000 | OIS adj. Pit direction position sensor error |
| | | | | E000 | OIS adj. other error |



PDF created with pdfFactory Pro trial version www.pdffactory.com

| Attribute | Main item | Sub item | Error code | | Contents (Upper) |
|---|---|---|---|---|---|
| | | | High 4 bits | Low 4 bits | Check point (Lower) |
| HARD | VENUS A/D | Flash | 2000 | 0000 | Flash charging error. |
| | | | | | IC6001-(13) signal line or Flash charging circ |
| | FLASH ROM / (EEPROM / Area) | FLASH ROM / (EEPROM / Area) | 2B00 | 0001 | EEPROM read error |
| | | | | | IC6002 (FLASH ROM) |
| | | | | 0002 | EEPROM write error |
| | | | | | IC6002 (FLASH ROM) |
| | SYSTEM | RTC | 2C00 | 0001 | SYSTEM IC initialize failure error |
| | | | | | Communication between IC6001 (VENUS PL IC9101 (SYSTEM) |
| SOFT | CPU | Reset | 3000 | 0001 \| 0007 | NMI reset<br>Non Mask-able Interrupt<br>(30000001-30000007 are caused by factors) |
| | Card | Card | 3100 | 0001 | Card logic error |
| | | | | | SD card data line or IC6001 (VENUS PLUS) |
| | | | | 0002 | Card physical error |
| | | | | | SD card data line or IC6001 (VENUS PLUS) |
| | | | | 0003 | Read error |
| | | | | | SD card data line or IC6001 (VENUS PLUS) |
| | | | | 0004 | Write error |
| | | | | | SD card data line or IC6001 (VENUS PLUS) |
| | | | | 0005 | Format error |
| | | | | | SD card data line or IC6001 (VENUS PLUS) |
| | CPU, / ASIC hard | Stop | 3800 | 0001 | Camera task finish process time out. |
| | | | | | Communication between Lens system and I (VENUS PLUS) |
| | | | | 0002 | Camera task invalid code error. |
| | | | | | IC6001 (VENUS PLUS) |
| | | | | 0100 | File time out error in recording motion imag |
| | | | | | IC6001 (VENUS PLUS) |
| | | | | 0002 | File data send error in recording motion ima |
| | | | | | IC6001 (VENUS PLUS) |
| | | Monitor | | 1000 | AF frame movement check time out. |
| | | | | | IC6001 (VENUS PLUS) |
| | Memory | Built-in / memory | 3900 | 0005 | Built-in memory format error |
| | | | | | FLASH ROM data line or IC6001 (VENUS PL |

## - 5. How to returned to Normal Display:

**Turn the power off and on, to exit from Error code display mode.**

**NOTE:**
**The error code can not be initialized by the unit only.**



PDF created with pdfFactory Pro trial version www.pdffactory.com

# 9. CONFIRMATION OF FIRMWARE VERSION

**The Firmware version can be confirmed by ordering the following steps:.**

**- Step 1. The temporary cancellation of factory setting:**

**Set the mode dial to “ [Normal Picture] (Red camera mark)”. While keep pressing [Optical Image Stabilizer] and “ [UP] of Cross key” simultaneously. turn the power on with inserting the SD memory card which has a few photo data.**

**- Step 2. Confirm the version:**

**Set the mode dial to “ [Playback] ” and then press [DISPLAY] to switch to LCD with indication. (Fig. A)**

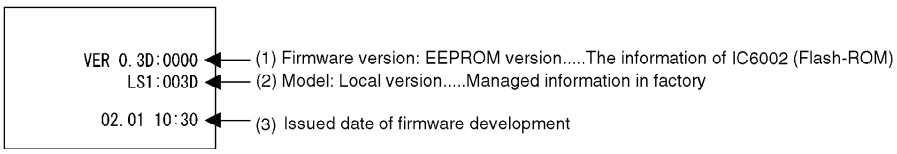
**Press [Optical Image Stabilizer] and “ [DOWN] of Cross key” simultaneously. (No need to keep pressing.)**

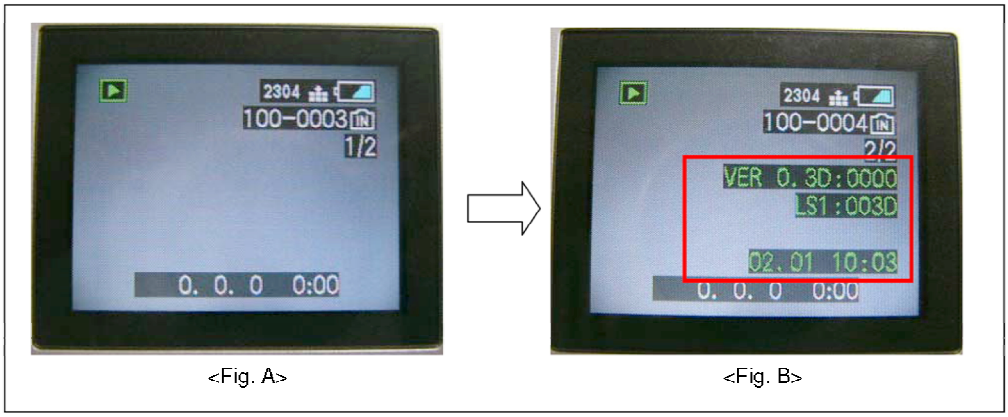
**(The version information is displayed on the LCD with green colour letters.) (Fig. B)**

**CAUTION:**

**The version information does not display if the LCD has switched to LCD with indication already.**

**In this case, press [DISPLAY] to switch to LCD with indication.**


VER 0.3D:0000
LS1:003D
02.01 10:30
(1) Firmware version: EEPROM version.....The information of IC6002 (Flash-ROM)
(2) Model: Local version.....Managed information in factory
(3) Issued date of firmware development




<Fig. A> <Fig. B>

**Point:**

**- The firmware version and EEPROM version can be confirmed with the information (1).**

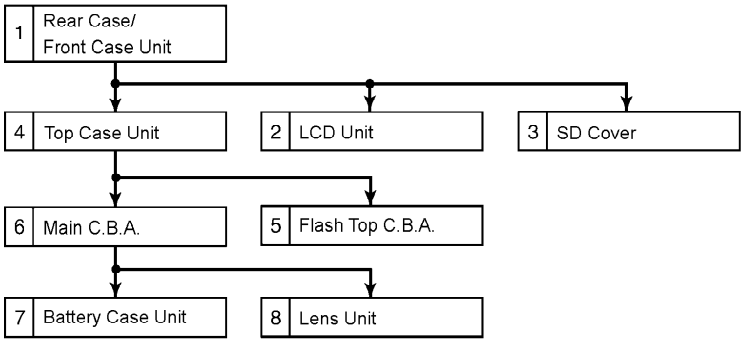
**- The information (2), (3) are just reference.**



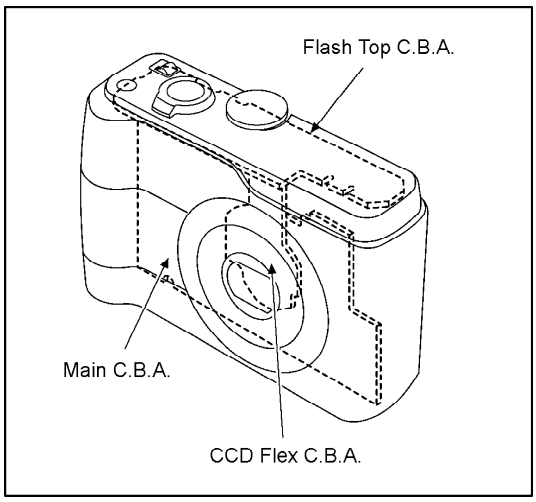
PDF created with pdfFactory Pro trial version www.pdffactory.com

# 10. DISASSEMBLY PROCEDURE

## 10.1. DISASSEMBLY FLOW CHART




## 10.2. C.B.A. LOCATION




## 10.3. DIASSEMBLY PROCEDURE



PDF created with pdfFactory Pro trial version www.pdffactory.com

| No. | Item | Fig | Removal |
|---|---|---|---|
| 1 | Rear Case/ / Front Case Unit | Fig. D1 | Card |
| | | | Battery |
| | | | 5 Screws (A) |
| | | | FP9003(Flex) |
| | | | P9001(Connector) |
| | | | 3 Locking tabs |
| | | | Rear Case Unit |
| | | | Front Case Unit |
| | | Fig. D2 | Removal of connector |
| 2 | LCD Unit | Fig. D3 | 1 Screw (B) |
| | | | LCD Holder |
| | | | LCD Unit |
| 3 | SD Cover | Fig. D4 | SD Plate |
| | | | SD Cover |
| 4 | Top Case Unit | Fig. D5 | 3 Screws (C) |
| | | | PP9001(Connector) |
| | | | Top Case Unit |
| 5 | Flash Top C.B.A. | Fig. D6 | 3 Screws (D) |
| | | | 3 Locking tabs |
| | | | Flash Cover |
| | | | Flash Top C.B.A. |
| | | Fig. D7 | NOTE: (When Installing) |
| 6 | Main C.B.A. | Fig. D8 | 4 Screws (E) |
| | | | FP9001(Flex) |
| | | | FP9002(Flex) |
| | | | 2 Solders |
| | | | Main C.B.A. |
| | | Fig. D9 | Removal of connector |
| 7 | Battery Case Unit | Fig. D10 | 2 Screws (F) |
| | | | 2 Solders |
| | | | Battery Case Unit |
| 8 | Lens Unit | Fig. D11 | 2 Screws (G) |
| | | | Lens Unit |

### 10.3.1. Removal of the Rear Case and Front Case Unit

**Fig. D1**



PDF created with pdfFactory Pro trial version www.pdffactory.com

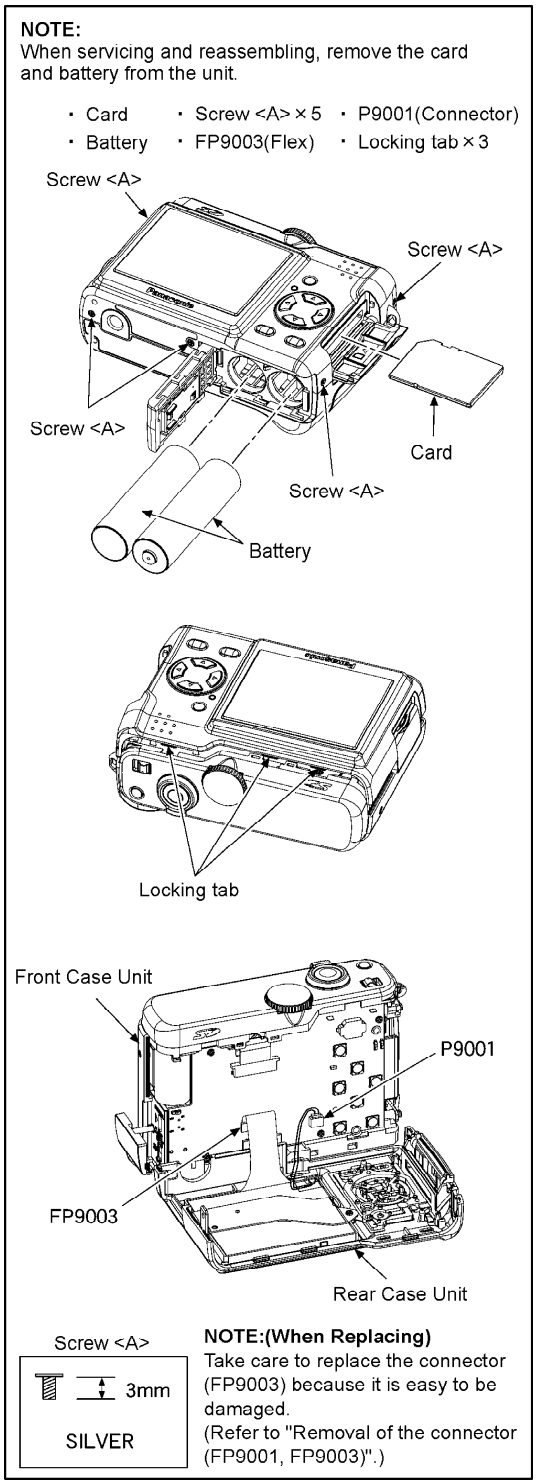


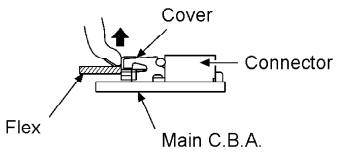

**Fig. D2**



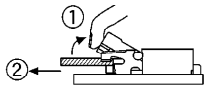
PDF created with pdfFactory Pro trial version www.pdffactory.com

Removal of the connector (FP9001, FP9003)

1. Lift the center of cover in the indicated by arrow.

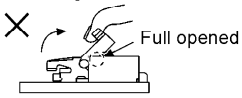



2. Release the lock of cover, and then pull out the flex.



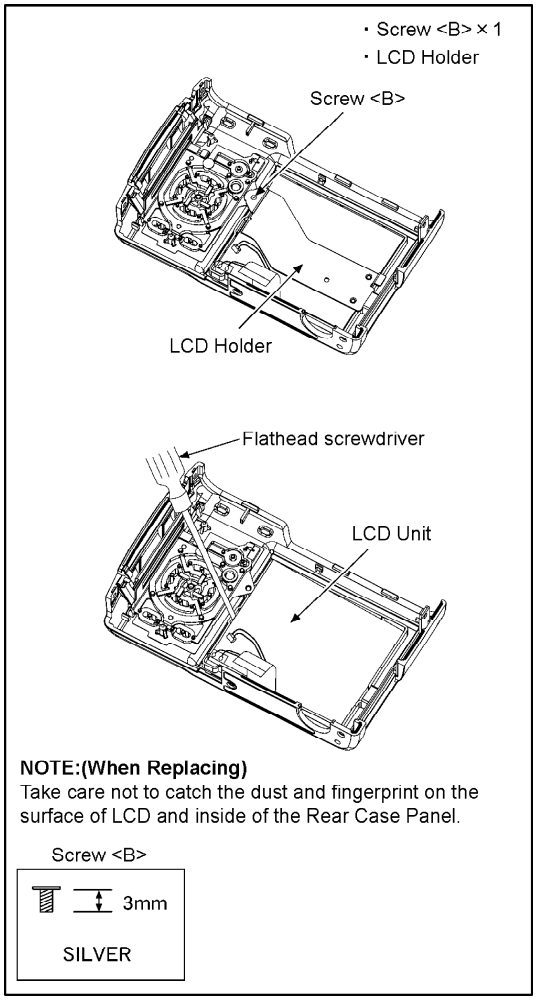

※ It is released the lock to turn the cover until an angle of 40.

**NOTE:** Do not push the cover over an angle of 135. It is full opened condition. (Refer to the figure as shown below.)




## 10.3.2. Removal of the LCD Unit

**Fig. D3**

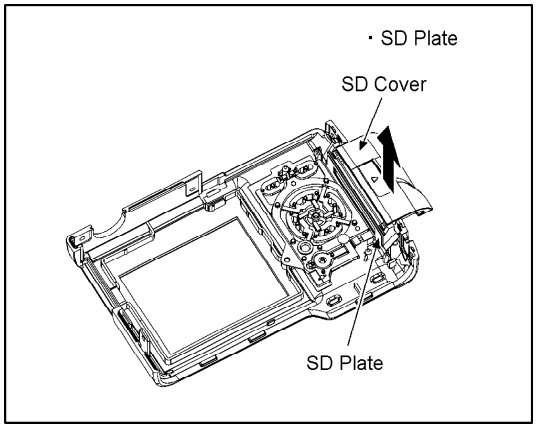





PDF created with pdfFactory Pro trial version www.pdffactory.com

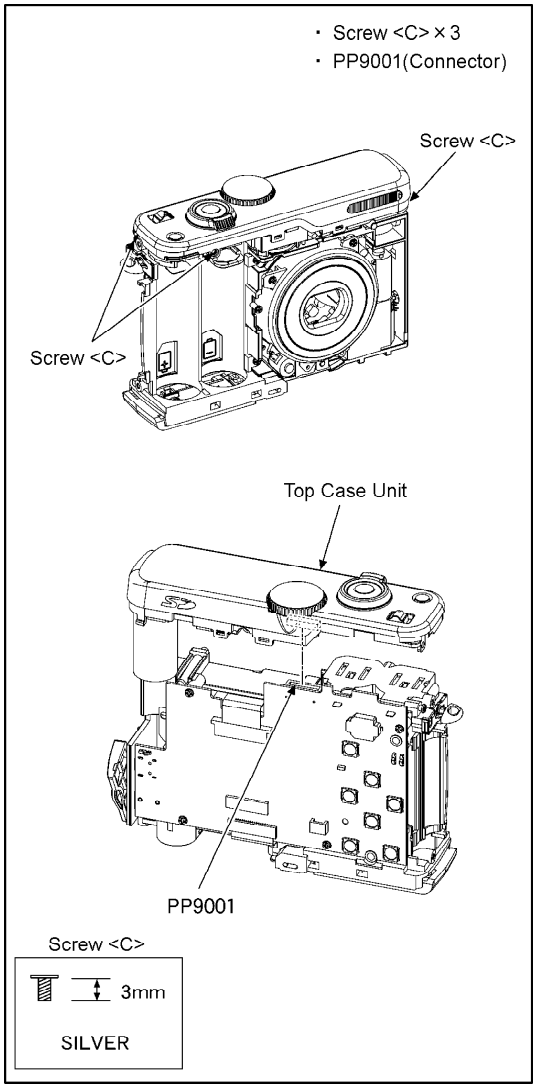
### 10.3.3. Removal of the SD Cover

**Fig. D4**




### 10.3.4. Removal of the Top Case Unit

**Fig. D5**

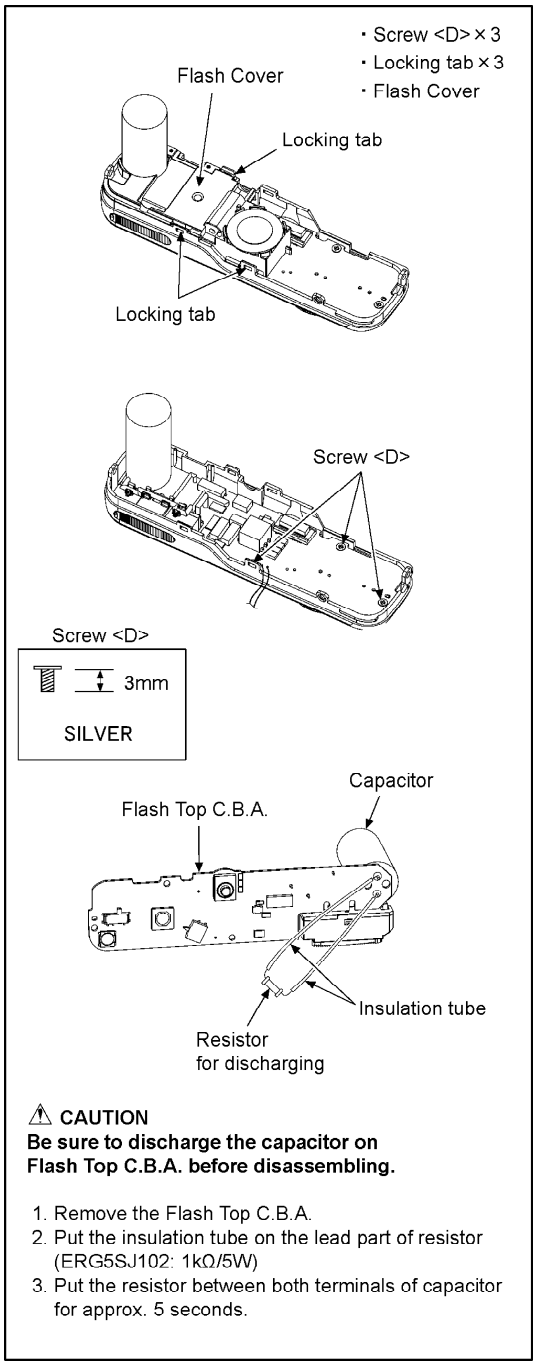



### 10.3.5. Removal of the Flash Top C.B.A.



PDF created with pdfFactory Pro trial version www.pdffactory.com

**Fig. D6**




⚠ **CAUTION**
**Be sure to discharge the capacitor on Flash Top C.B.A. before disassembling.**

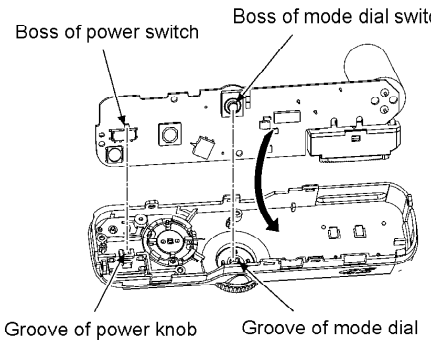
1. Remove the Flash Top C.B.A.
2. Put the insulation tube on the lead part of resistor (ERG5SJ102: 1kΩ/5W)
3. Put the resistor between both terminals of capacitor for approx. 5 seconds.

**Fig. D7**



PDF created with pdfFactory Pro trial version www.pdffactory.com

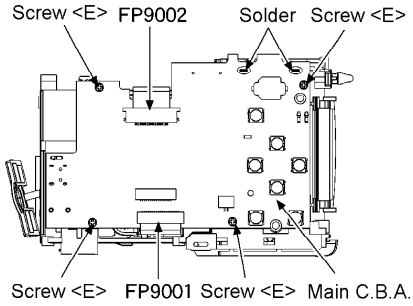
**NOTE: (When Installing)**
Align the boss of power switch and groove of power knob.
Align the boss of mode dial switch and groove of mode dial.




## 10.3.6. Removal of the Main C.B.A.

**Fig. D8**

- Screw <E> × 4
- FP9001(Flex)
- FP9002(Flex)
- Solder × 2




**NOTE:(When Replacing)**
Take care to replace the connector (FP9001) because it is easy to be damaged.
(Refer to "Removal of the connector (FP9001, FP9003)".)

Screw <E>

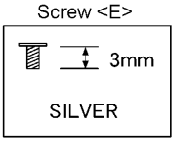


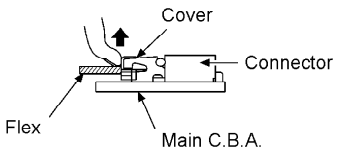

**Fig. D9**



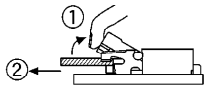
PDF created with pdfFactory Pro trial version www.pdffactory.com

Removal of the connector (FP9001, FP9003)

1. Lift the center of cover in the indicated by arrow.

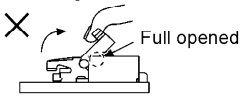



2. Release the lock of cover, and then pull out the flex.



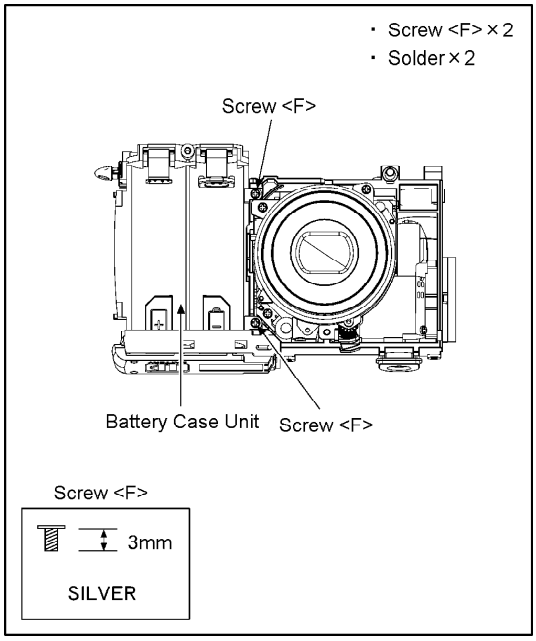

※ It is released the lock to turn the cover until an angle of 40.

**NOTE:** Do not push the cover over an angle of 135. It is full opened condition. (Refer to the figure as shown below.)




## 10.3.7. Removal of the Battery Case Unit

**Fig. D10**

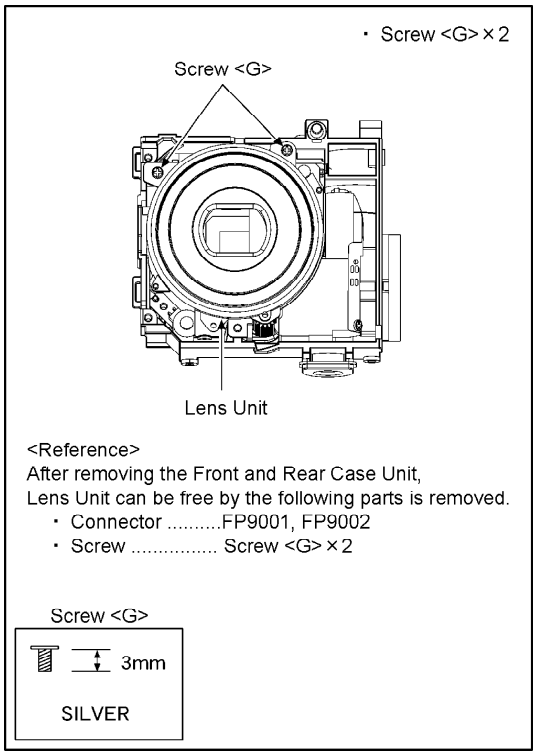



## 10.3.8. Removal of the Lens Unit

**Fig. D11**



PDF created with pdfFactory Pro trial version www.pdffactory.com




**NOTE: (When Assembling)**
**Confirm the contents as shown below.**

**- Condition of the screw is tightened.**
**- Assembling condition of mechanism parts (distortion, space etc.).**
**- Dust and dirt of the lens, display condition of the LCD (gradient etc.).**
**- Dust and dirt of the LCD**

## 10.4. DISASSEMBLY PROCEDURE FOR THE LENS

**NOTE: When Disassembling and Assembling for the Lens**

**1. Use lens cleaning KIT (VFK1900BK).**

**2. To prevent the lens from catching the dust and dirt, perform the following procedures with the CCD unit is installing.**

**3. Take care that the dust and dirt are not entered into the lens.**

**4. Do not touch the surface of lens.**

### 10.4.1. Removal of the Zoom Motor Unit and Master Flange Unit

**1. Remove the solders (2 points).**



PDF created with pdfFactory Pro trial version www.pdffactory.com

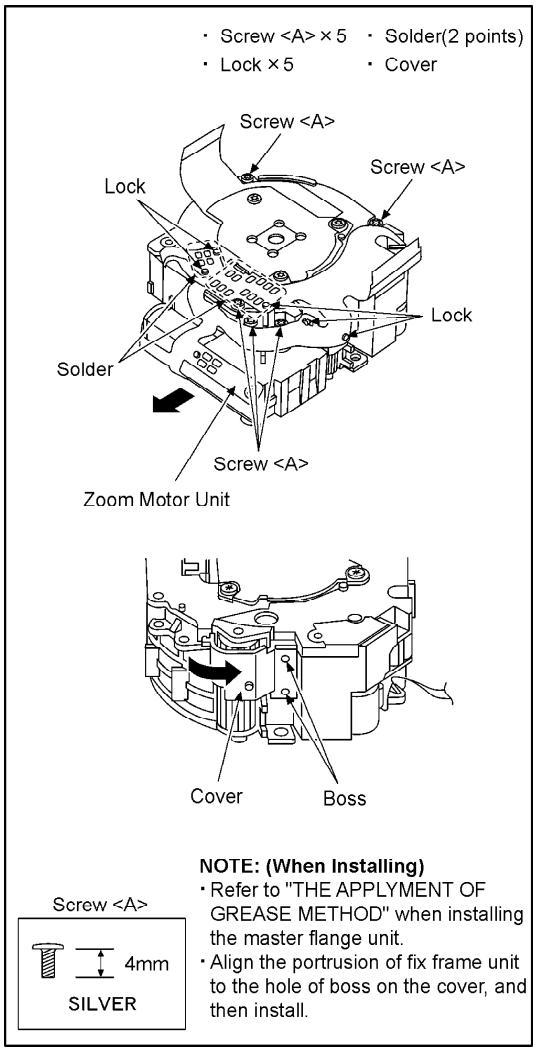
**2. Remove the lock (5 points).**

**3. Unscrew the 5 screws (A).**

**4. Remove the Zoom Motor Unit to the indicated by arrow.**

**5. Remove the Cover to the indicated by arrow.**

**6. Remove the Master Flange Unit.**

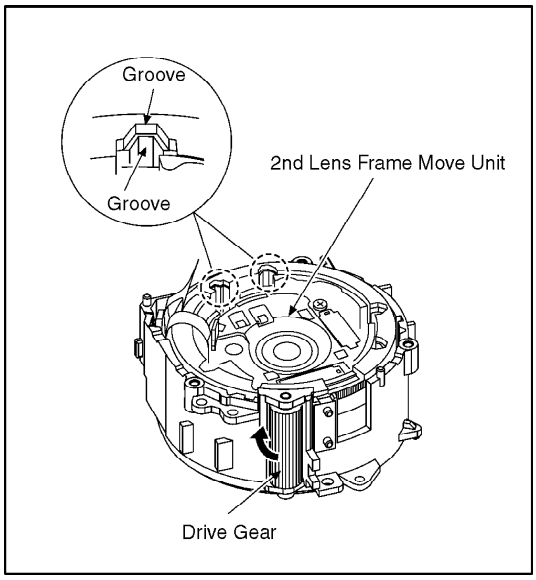



## 10.4.2. Removal of the Drive/Direct Unit, 1st Lens Frame/2nd Lens Frame Move Unit

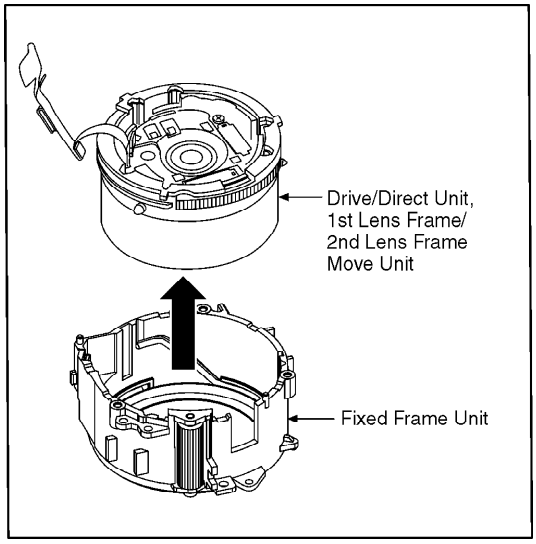
**1. Turn the drive gear to the indicated by arrow fully.**



PDF created with pdfFactory Pro trial version www.pdffactory.com



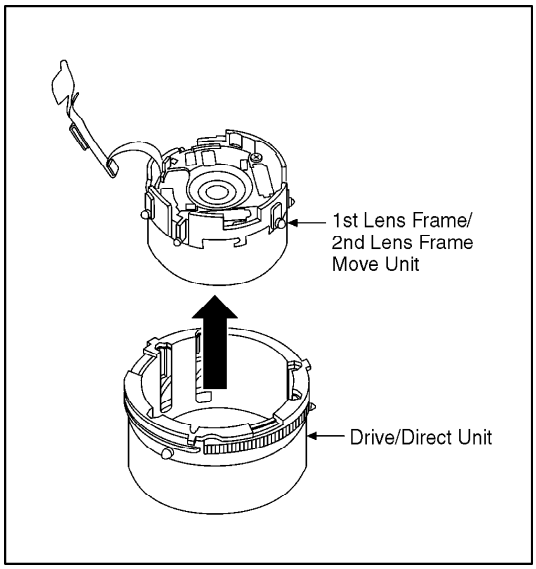

1. **Push the drive unit to the indicated by arrow from lens side, and then remove the unit of drive/direct unit, 1st lens frame/2nd lens frame move unit from the fixed frame unit.**



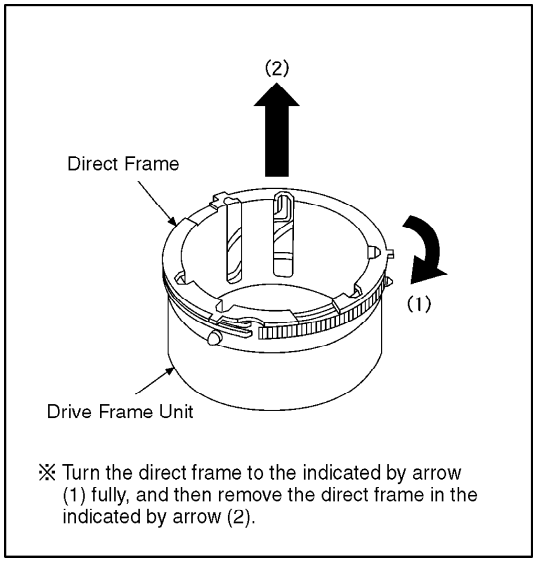

1. **Push the 1st lens frame move unit to the indicated by arrow from lens side, and then remove the unit of 1st lens frame/2nd lens frame move unit from the drive/direct unit.**



PDF created with pdfFactory Pro trial version www.pdffactory.com




### 10.4.3. Removal of the Direct Frame

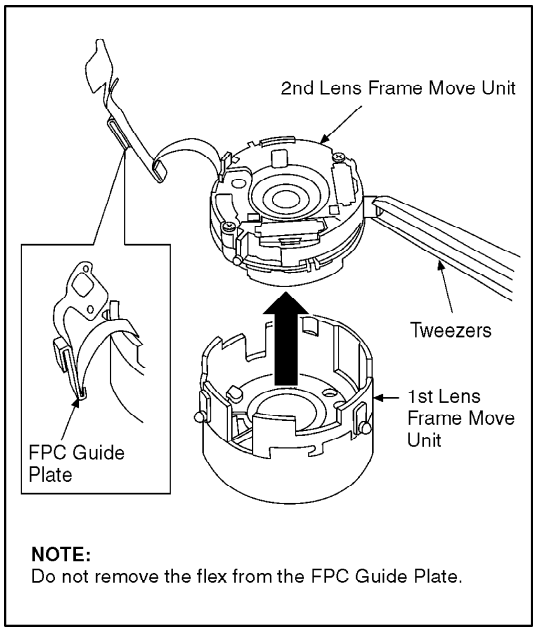



※ Turn the direct frame to the indicated by arrow (1) fully, and then remove the direct frame in the indicated by arrow (2).

### 10.4.4. Removal of the 2nd Lens Frame Move Unit

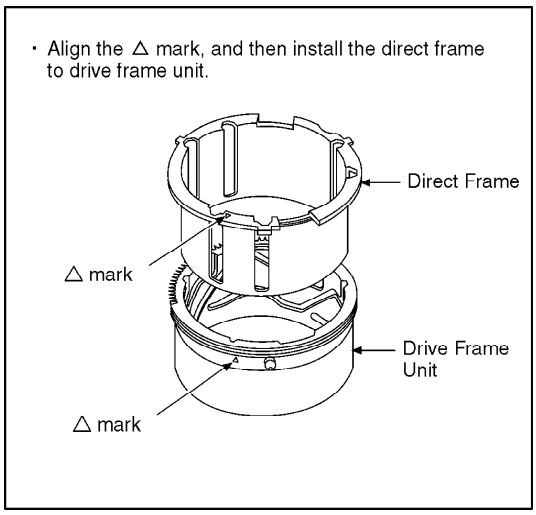


PDF created with pdfFactory Pro trial version www.pdffactory.com


2nd Lens Frame Move Unit
Tweezers
1st Lens Frame Move Unit
FPC Guide Plate
NOTE:
Do not remove the flex from the FPC Guide Plate.

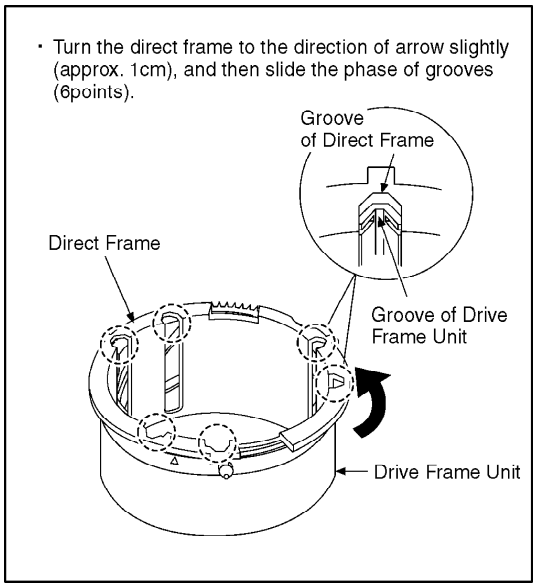
## 10.5. ASSEMBLY PROCEDURE FOR THE LENS

### 10.5.1. Phase alignment of the Direct Frame and Drive Frame Unit

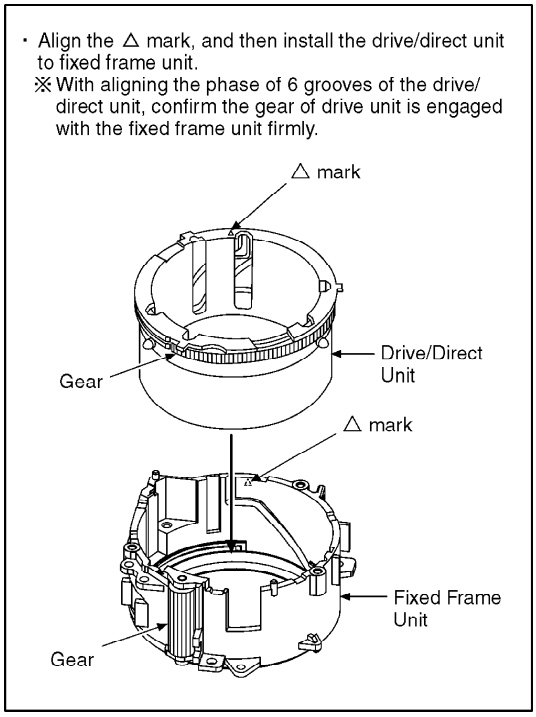





PDF created with pdfFactory Pro trial version www.pdffactory.com

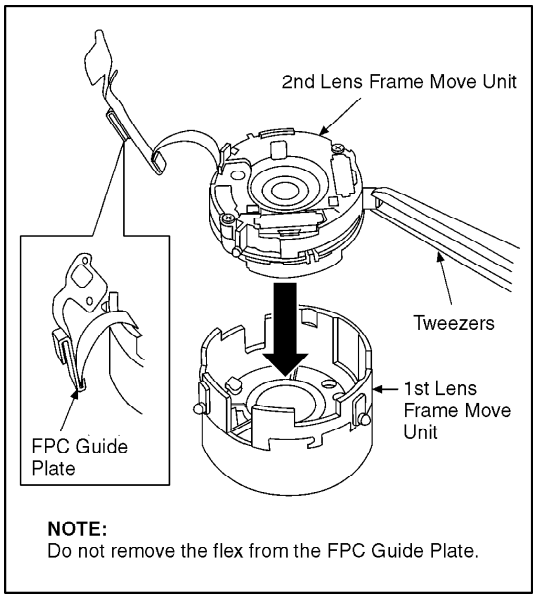

・ Turn the direct frame to the direction of arrow slightly (approx. 1cm), and then slide the phase of grooves (6points).
Groove of Direct Frame
Direct Frame
Groove of Drive Frame Unit
Drive Frame Unit

## 10.5.2. Phase alignment of the Drive/Direct Unit and Fixed Frame


・ Align the △ mark, and then install the drive/direct unit to fixed frame unit.
※ With aligning the phase of 6 grooves of the drive/ direct unit, confirm the gear of drive unit is engaged with the fixed frame unit firmly.
△ mark
Drive/Direct Unit
Gear
△ mark
Fixed Frame Unit
Gear

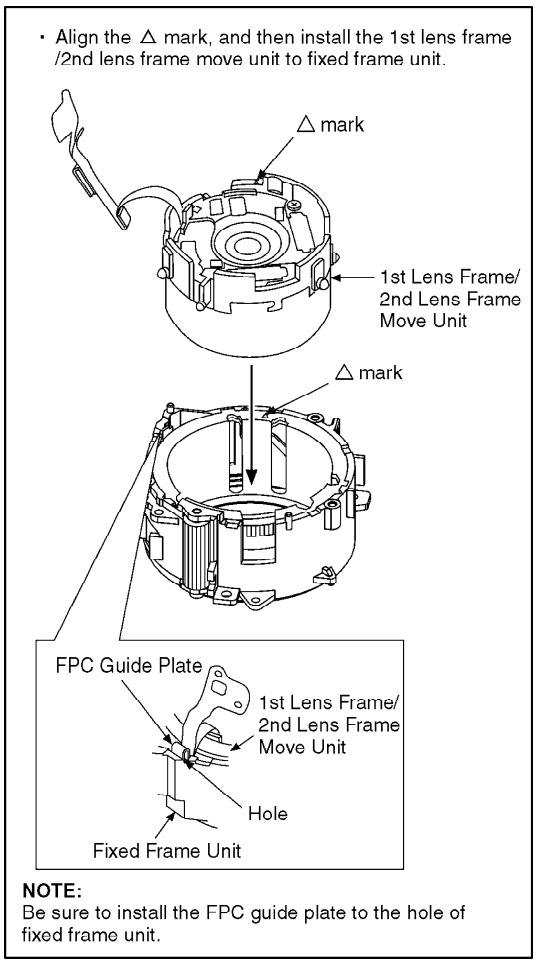


PDF created with pdfFactory Pro trial version www.pdffactory.com




**NOTE:**
Do not remove the flex from the FPC Guide Plate.

- Align the △ mark, and then install the 1st lens frame /2nd lens frame move unit to fixed frame unit.

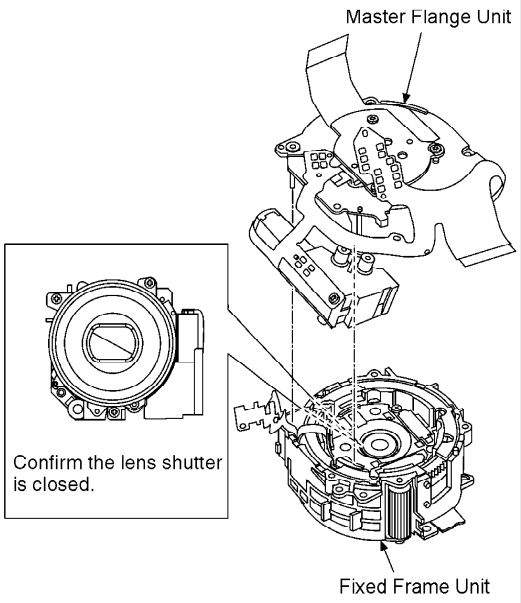


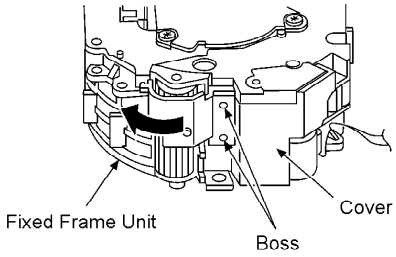

**NOTE:**
Be sure to install the FPC guide plate to the hole of fixed frame unit.

## 10.5.3. Assembly for the Zoom Motor Unit and Master Flange Unit

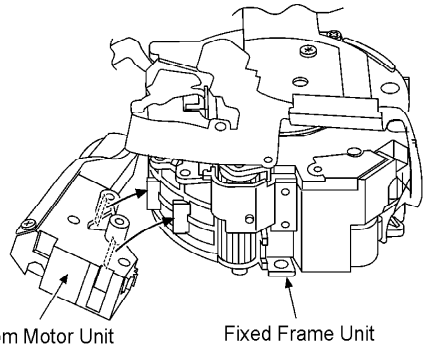


PDF created with pdfFactory Pro trial version www.pdffactory.com



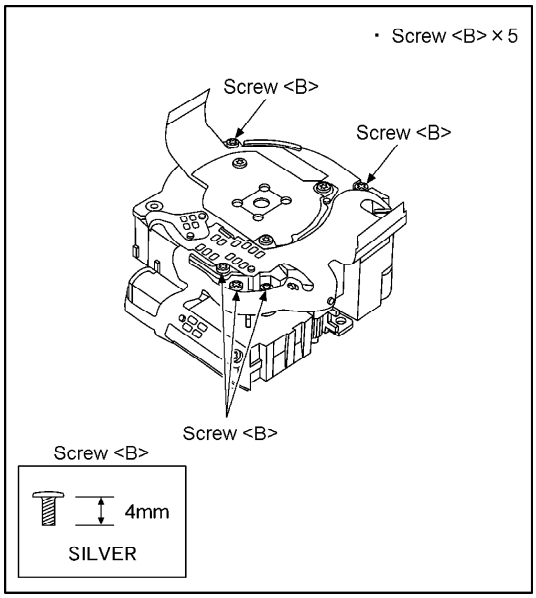

**NOTE: (When Installing)**
Align the protrusion of fix frame unit to the hole of boss on the cover, and then install.

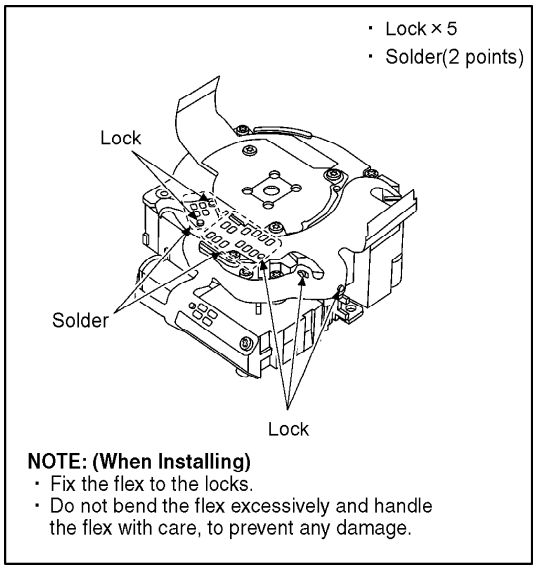



**NOTE: (When Installing)**
Align the convex of fixed frame unit to the reentrant of zoom motor unit, and then install.



PDF created with pdfFactory Pro trial version www.pdffactory.com





・ Lock × 5
・ Solder(2 points)
Lock
Solder
Lock
NOTE: (When Installing)
・ Fix the flex to the locks.
・ Do not bend the flex excessively and handle the flex with care, to prevent any damage.

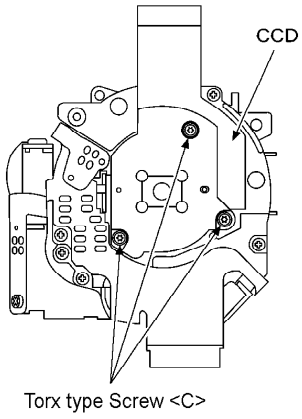
## 10.6. REMOVAL OF THE CCD

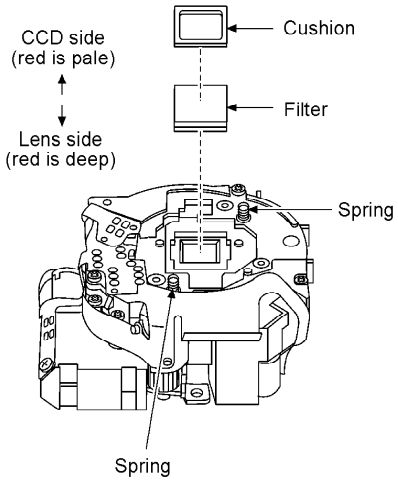
**To prevent unnecessary dust being entered, do not remove the CCD Unit except for servicing.**
**- Trox driver (T3): VFK1755**



PDF created with pdfFactory Pro trial version www.pdffactory.com

- Torx type Screw <C> × 3
- Spring × 2
- Cushion × 1
- Filter × 1




**NOTE: (When installing the CCD Unit)**
Set the Optical filter with borrowed light of fluorescent light is caught on the surface of optical filter.
Color density (red) is changed when the angle of Optical filter is changed, confirm the installation side as following.
Lens side: red color is deeper than the other side.
CCD side: red color is paler than the other side.
It can be easy to confirm the red color density on the blue paper.

## 10.7. THE APPLYMENT OF GREASE METHOD

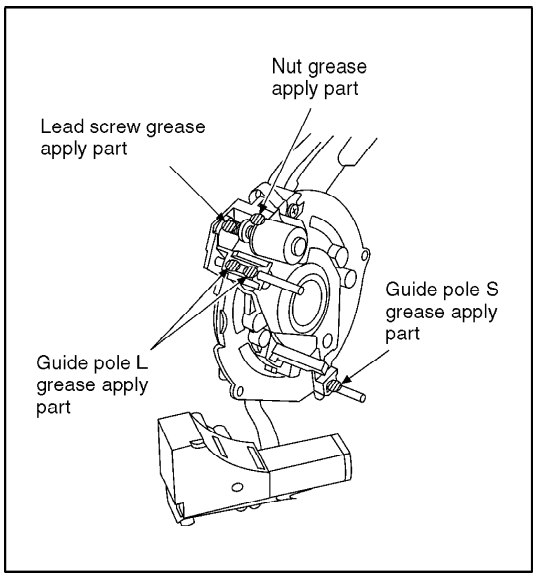
**The grease apply point of lens unit are as follows.**
**Apply grease additionally in the specified position if necessary.**

**- lead screw, Nut**
**- Grease: VFK1850 (Furoyl type)**
**- Amount of apply: 2 - 4 mg**
**- Guide pole S and Guide pole L**
**- Grease: VFK1829**



PDF created with pdfFactory Pro trial version www.pdffactory.com

**- Amount of apply: 2 - 4 mg**




# 11. SCHEMATIC DIAGRAMS

## 11.1. OVERALL BLOCK DIAGRAM

## 11.2. WIRING CONNECTION DIAGRAM

## 11.3. FLASH TOP SCHEMATIC DIAGRAM

## 11.4. CCD SCHEMATIC DIAGRAM

## 11.5. LENS FLEX SCHEMATIC DIAGRAM

# 12. CIRCUIT BOARD ASSEMBLIES

## 12.1. CCD C.B.A.

## 12.2. FLASH TOP C.B.A.

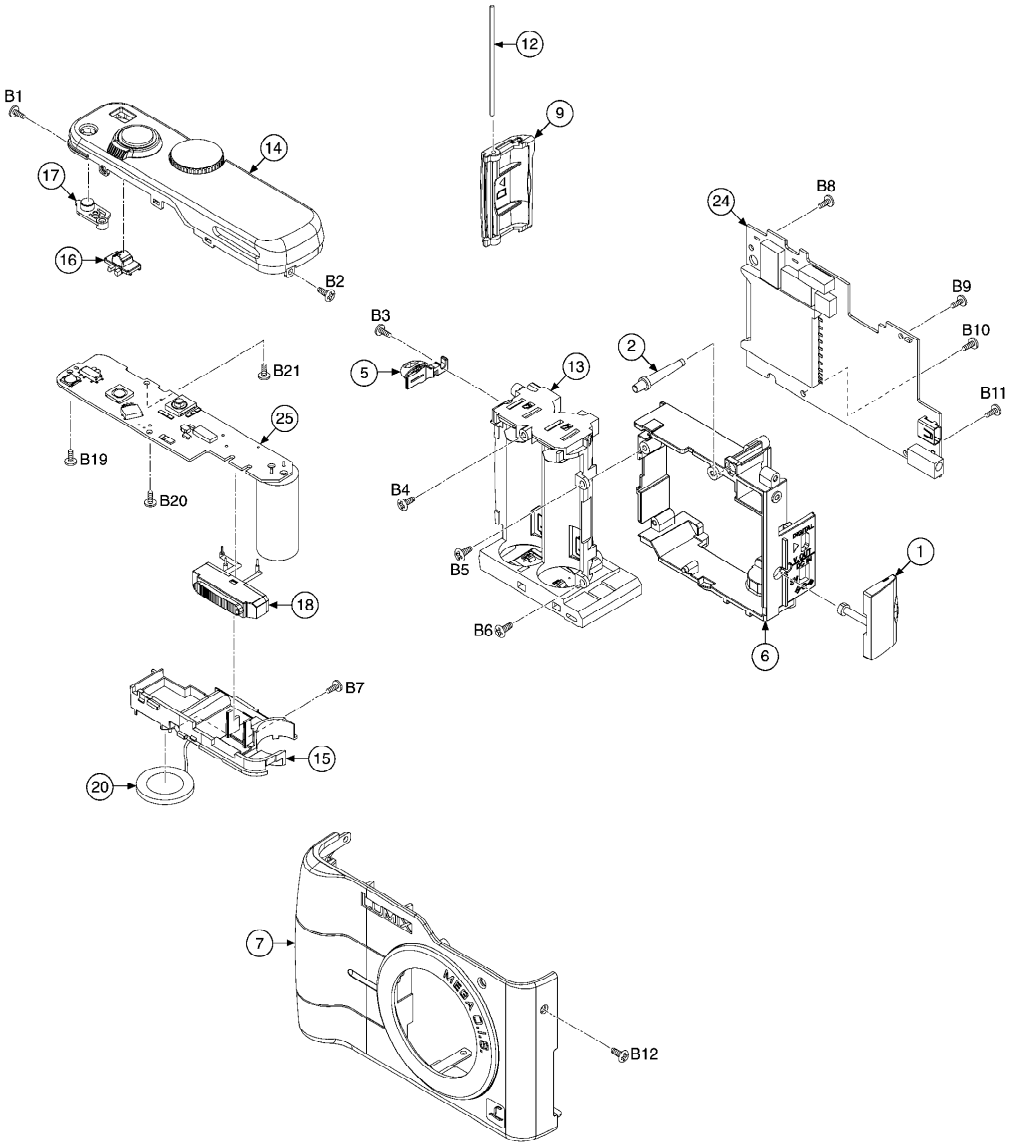
## 12.3. LENS FLEX C.B.A.

# 13. EXPLODED VIEWS

## 13.1. FRAME & CASING SECTION

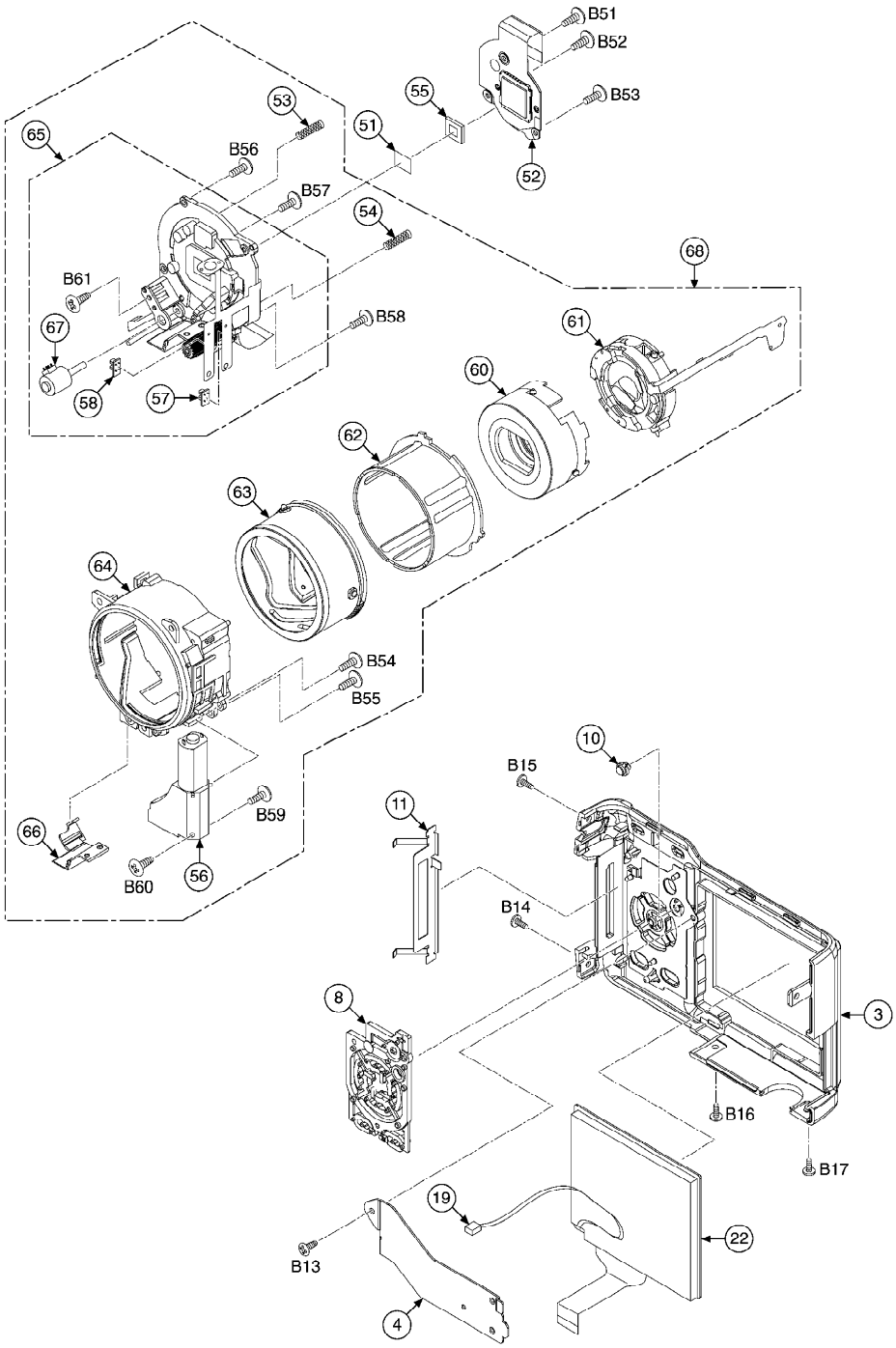


PDF created with pdfFactory Pro trial version www.pdffactory.com





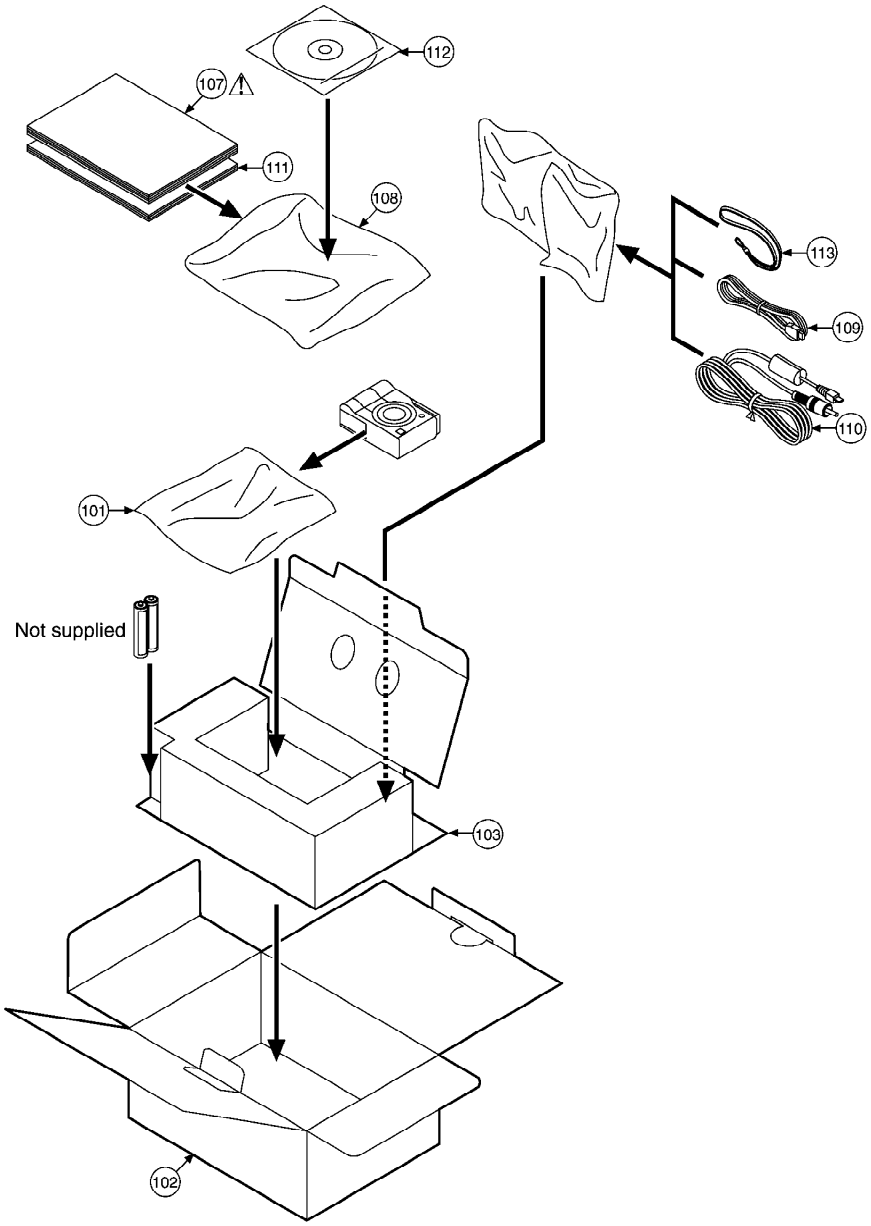

PDF created with pdfFactory Pro trial version www.pdffactory.com




## 13.2. PACKING PARTS & ACCESSORIES SECTION



PDF created with pdfFactory Pro trial version www.pdffactory.com




# 14. REPLACEMENT PARTS LIST

## 14.1. MECHANICAL REPLACEMENT PARTS LIST

Notes: 1.* Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
Components identified with the mark ⚠ have the special characteristics for safety.
When replacing any of these components, use only the same type.
3. The marking(RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.
4. Supply of CD-ROM, in accordance with license protection, is allowable as replacement parts only for customers who accidentally damaged or lost their own.

### 14.1.1. FRAME & CASING SECTION PARTS LIST



PDF created with pdfFactory Pro trial version www.pdffactory.com

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| 1 | VKF4001 | JACK COVER | DMC-LS1 / Silver series |
| 1 | VKF4005 | JACK COVER | DMC-LS1 / Blue series |
| 1 | VKF4006 | JACK COVER | DMC-LS1 / Brown series |
| 2 | VKW3277 | LED PANEL(F) | |
| 3 | VYK1P09 | REAR CASE UNIT | DMC-LS1 / Silver series |
| 3 | VYK1P10 | REAR CASE UNIT | DMC-LS1 / Blue series |
| 3 | VYK1P11 | REAR CASE UNIT | DMC-LS1 / Brown series |
| 4 | VMA0T29 | LCD HOLDER | |
| 5 | VMD5285 | STRAP HOLDER | |
| 6 | VMP8287 | FRAME | |
| 7 | VYK1N47 | FRONT CASE UNIT | DMC-LS1 / Silver series |
| 7 | VYK1N69 | FRONT CASE UNIT | DMC-LS1 / Blue series |
| 7 | VYK1N70 | FRONT CASE UNIT | DMC-LS1 / Brown series |
| 8 | VGU9797 | REAR KNOB | |
| 9 | VKF3999 | SD COVER | DMC-LS1 / Silver series |
| 9 | VKF4003 | SD COVER | DMC-LS1 / Blue series |
| 9 | VKF4004 | SD COVER | DMC-LS1 / Brown series |
| 10 | VKW3276 | LED PANEL | |
| 11 | VMA0T21 | SD PLATE | |
| 12 | VMS7584 | SD SHAFT | |
| 13 | VYK1N49 | BATTERY CASE UNIT | DMC-LS1 / Silver series |
| 13 | VYK1N67 | BATTERY CASE UNIT | DMC-LS1 / Blue series |
| 13 | VYK1N68 | BATTERY CASE UNIT | DMC-LS1 / Brown series |
| 14 | VYK1P08 | TOP CASE UNIT | |
| 15 | VGQ8421 | FLASH COVER | |
| 16 | VGU9800 | POWER KNOB | |
| 17 | VGU9801 | OIS KNOB | |
| 18 | EFN-KRT42 | FLASH UNIT | |
| 19 | K1PB02000058 | LCD BACKLIGHT CONNECTOR / UNIT | |
| 20 | L0DCDD000006 | BUZZER | |
| 22 | L5EDDXG00001 | LCD | |
| 24 | VEP56021A | MAIN C.B.A. | (RTL) |
| 25 | VEP58012A | FLASH TOP C.B.A. | (RTL) |
| 51 | VDL1603 | OPTICAL FILTER | |
| 52 | VEK0H65 | CCD UNIT | |
| 53 | VMB3683 | CCD SPRING | |
| 54 | VMB3683 | CCD SPRING | |
| 55 | VMX3437 | CCD CUSHION RUBBER | |
| 56 | L6DA8BEC0001 | ZOOM MOTOR UNIT | |
| 57 | B3NAA0000092 | PHOTO SENSOR | |
| 58 | B3NAA0000092 | PHOTO SENSOR | |
| 60 | VXP2464 | 1ST LENS FRAME MOVE UNIT | |
| 61 | VXP2414 | 2ND LENS FRAME MOVE UNIT | |
| 62 | VDW1092 | DIRECT FRAME | |
| 63 | VXP2415 | DRIVE FRAME UNIT | |
| 64 | VXQ1265 | FIX FRAME UNIT | |
| 65 | VXQ1354 | MASTER FLANGE UNIT | |
| 66 | VMA0T19 | COVER | |
| 67 | 06SSS6F3NM | FOCUS MOTOR UNIT | |
| 68 | VXW0717 | LENS UNIT | (W/O CCD) |
| | | | |
| B1 | SG053-89 | SCREW | |
| B2 | SG053-89 | SCREW | |
| B3 | SG053-89 | SCREW | |



PDF created with pdfFactory Pro trial version www.pdffactory.com

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| B4 | SG053-89 | SCREW | |
| B5 | SG053-89 | SCREW | |
| B6 | SG053-89 | SCREW | |
| B7 | SG053-89 | SCREW | |
| B8 | SG053-89 | SCREW | |
| B9 | SG053-89 | SCREW | |
| B10 | SG053-89 | SCREW | |
| B11 | SG053-89 | SCREW | |
| B12 | SG053-89 | SCREW | |
| B13 | SG053-89 | SCREW | |
| B14 | SG053-89 | SCREW | |
| B15 | SG053-89 | SCREW | |
| B16 | SG053-89 | SCREW | |
| B17 | SG053-89 | SCREW | |
| B19 | SG053-92 | SCREW | |
| B20 | SG053-92 | SCREW | |
| B21 | SG053-92 | SCREW | |
| B51 | VHD1726 | SCREW | |
| B52 | VHD1726 | SCREW | |
| B53 | VHD1726 | SCREW | |
| B54 | VHD1743 | SCREW | |
| B55 | VHD1743 | SCREW | |
| B56 | VHD1743 | SCREW | |
| B57 | VHD1743 | SCREW | |
| B58 | VHD1743 | SCREW | |
| B59 | VHD1745 | SCREW | |
| B60 | VHD1745 | SCREW | |
| B61 | VHD1744 | SCREW | |

## 14.1.2. PACKING PARTS & ACCESSORIES SECTION PARTS LIST

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| 101 | VPF1221 | CAMERA BAG | |
| 102 | VPK2972 | PAKING CASE | DMC-LS1EB-S/ / EG-S/EGM-S/ / GC-S/GN-S/ / GT-S/PL-S/ / SG -S |
| 102 | VPK3002 | PAKING CASE | DMC-LS1GC-A |
| 102 | VPK3005 | PAKING CASE | DMC-LS1GC-T |
| 102 | VPK2989 | PAKING CASE | DMC-LS1GK-S |
| 102 | VPK3003 | PAKING CASE | DMC-LS1GK-A |
| 102 | VPK2971 | PAKING CASE | DMC-LS1PP-S |
| 103 | VPN6317 | PAD | |
| 107 | VQT0Q71 | INSTRUCTION BOOK / (ENGLISH) | ⚠ / DMC-LS1EB-S |
| 107 | VQT0Q63 | INSTRUCTION BOOK / (GERMAN) | ⚠ / DMC-LS1EG-S |
| 107 | VQT0Q64 | INSTRUCTION BOOK / (FRENCH) | ⚠ / DMC-LS1EG-S |
| 107 | VQT0Q65 | INSTRUCTION BOOK / (ITALIAN) | ⚠ / DMC-LS1EG-S |
| 107 | VQT0Q66 | INSTRUCTION BOOK / (DUTCH) | ⚠ / DMC-LS1EG-S |
| 107 | VQT0Q67 | INSTRUCTION BOOK / (SPANISH) | ⚠ / DMC-LS1EGM-S |
| 107 | VQT0Q68 | INSTRUCTION BOOK / (PORTUGUESE) | ⚠ / DMC-LS1EGM-S |
| 107 | VQT0Q69 | INSTRUCTION BOOK / (DANISH) | ⚠ / DMC-LS1EGM-S |



PDF created with pdfFactory Pro trial version www.pdffactory.com

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| 107 | VQT0Q70 | INSTRUCTION BOOK / (SWEDISH) | ⚠ / DMC-LS1EGM-S |
| 107 | VQT0Q72 | INSTRUCTION BOOK / (ENGLISH) | ⚠ / DMC-LS1GC-A/ / GC-S/ GC-T/ / SG-S |
| 107 | VQT0Q73 | INSTRUCTION BOOK / (CHINESE (TRADITIONAL)) | ⚠ / DMC-LS1GC-A/ / GC-S/ GC-T/ / SG-S |
| 107 | VQT0Q74 | INSTRUCTION BOOK / (RUSSIAN) | ⚠ / DMC-LS1GC-A/ / GC-S/ GC-T/ / SG-S |
| 107 | VQT0Q75 | INSTRUCTION BOOK / (ARABIC) | ⚠ / DMC-LS1GC-A/ / GC-S/ GC-T/ / SG-S |
| 107 | VQT0Q77 | INSTRUCTION BOOK / (CHINESE (SIMPLIFIED)) | ⚠ / DMC-LS1GK-A/ / GK-S |
| 107 | VQT0Q78 | INSTRUCTION BOOK / (ENGLISH) | ⚠ / DMC-LS1GN-S |
| 107 | VQT0Q76 | INSTRUCTION BOOK / (CHINESE (TRADITIONAL)) | ⚠ / DMC-LS1GT-S |
| 107 | VQT0Q60 | INSTRUCTION BOOK / (ENGLISH) | ⚠ / DMC-LS1PL-S |
| 107 | VQT0Q61 | INSTRUCTION BOOK / (SPANISH) | ⚠ / DMC-LS1PL-S |
| 107 | VQT0Q62 | INSTRUCTION BOOK / (POTUGUESE) | ⚠ / DMC-LS1PL-S |
| 107 | VQT0Q58 | INSTRUCTION BOOK / (ENGLISH/SPANISH) | ⚠ / DMC-LS1PP-S |
| 107 | VQT0Q59 | INSTRUCTION BOOK / (CANADIAN FRENCH) | ⚠ / DMC-LS1PP-S |
| 108 | VPF1100 | POLY BAG | DMC-LS1EB-S/ / GK-A/GK-S/ / GN-S/PP-S |
| 108 | VPF1132 | POLY BAG | DMC-LS1EG-S/ / EGM-S/GC-A/ / GC-S/GC-T/ / PL-S |
| 109 | K1HA08CD0004 | USB CABLE W/PLUG | |
| 110 | K1HA08CD0006 | VIDEO CABLE W/PLUG | |
| 111 | VQT0Q88 | INSTRUCTION BOOK(APPL.) / (ENGLISH) | DMC-LS1EB-S |
| 111 | VQT0Q84 | INSTRUCTION BOOK(APPL.) / (GERMAN/FRENCH) | DMC-LS1EG-S |
| 111 | VQT0Q85 | INSTRUCTION BOOK(APPL.) / (ITALIAN/DUTCH) | DMC-LS1EG-S |
| 111 | VQT0Q86 | INSTRUCTION BOOK(APPL.) / (SPANISH/PORTUGUESE) | DMC-LS1EGM-S |
| 111 | VQT0Q87 | INSTRUCTION BOOK(APPL.) / (SWEDISH/DANISH) | DMC-LS1EGM-S |
| 111 | VQT0Q89 | INSTRUCTION BOOK(APPL.) / (ENGLISH/ / CHINESE(TRADITIONAL)) | DMC-LS1GC-A/ / GC-S/GC-T/ / SG-S |
| 111 | VQT0Q90 | INSTRUCTION BOOK(APPL.) / (ARABIC/RUSSIAN) | DMC-LS1GC-A/ / GC-S/GC-T/ / SG-S |
| 111 | VQT0Q91 | INSTRUCTION BOOK(APPL.) / (CHINESE (SIMPLIFIED)) | DMC-LS1GK-A/ / GK-S |
| 111 | VQT0Q92 | INSTRUCTION BOOK(APPL.) / (ENGLISH) | DMC-LS1GN-S |
| 111 | VQT0P63 | INSTRUCTION BOOK (APPL.) / (CHINESE (TRADITIONAL)) | DMC-LS1GT-S |
| 111 | VQT0Q83 | INSTRUCTION BOOK(APPL.) / (ENGLISH/SPANISH/ / PORTUGUESE) | DMC-LS1PL-S |
| 111 | VQT0Q82 | INSTRUCTION BOOK(APPL.) / (ENGLISH/CANADIAN FRENCH) | DMC-LS1PP-S |
| 112 | VFF0279-S | CD-ROM | (See Notes) / DMC-LS1EB-S/ / EG-S/EGM-S/ / GC-A/GC-S/ / GC-T/GK-A/ / GK-S/GN-S/ / GT-S/PL-S/ / SG-S |
| 112 | VFF0278-S | CD-ROM | (See Notes) / DMC-LS1PP-S |
| 113 | VFC4090 | HAND STRAP | |

## 14.1.3. SERVICE FIXTURE & TOOLS



PDF created with pdfFactory Pro trial version www.pdffactory.com

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | VFK1870 | EXTENSION CABLE / (30PIN-B TO B) | [PP9001 / (MAIN) - / PS8001 / (FLASH TOP)] |
| | VFK1576DC202 | EXTENSION CABLE / (2PIN-CABLE) | [P9001 / (MAIN) - LCD / BACKLIGHT] |
| | VFK1582A2125 | EXTENSION CABLE / (21PIN-FFC) | [FP9002 / (MAIN) - / CCD UNIT] |
| | VFK1950 | EXTENSION CABLE / (33PIN-FFC) | [FP9003 / (MAIN) - / LCD UNIT] |
| | VFK1951 | EXTENSION CABLE / (39PIN-FFC) | [FP9001 / (MAIN) - / LENS UNIT] |
| | ERG5SJ102 | RESISTOR FOR DISCHARGING | |
| | VFK1164TCM02 | INFINITY LENS / (WITH FOCUS CHART) | |
| | VFK1164TDVLB | LIGHT BOX | |
| | VFK1949 | TR CHART | |
| | VFK1900BK | LENS CLEANING KIT (BK) | |
| | VFK1755 | T3 TROX DRIVER | |
| | VFK1829 | GREASE(FOR LENS) | |
| | VFK1850 | GREASE(FOR FOCUS MOTOR) | |
| | | | |

## 14.2. ELECTRICAL REPLACEMENT PARTS LIST

Note: 1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE : Components identified with the mark ⚠ have the special characteristics for safety. When replacing any of these components, use only the same type.
3. Unless otherwise specified.
All resistors are in OHMS , K=1,000 OHMS. All capacitors are in MICRO-FARADS(uf) , P=uuuF.
4. The P.C.Board units marked width"▮"show below the main assembled parts.
5. The marking(RTL) indicates the retention time is limited for this item. After the discontinuation of this assembly in production, it will no longer be available.

**E.S.D. standards for Electrostatically Sensitive Devices, refer to "PREVENTION OF ELECTROSTATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section.**

**Definition of Parts supplier:**

**1. Parts marked with [MBI] in the remarks column are supplied from "Matsushita Battery Industrial co., ltd." .**



PDF created with pdfFactory Pro trial version www.pdffactory.com

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| | | | |
| | | ------ P.C.B. LIST ------ | |
| ■ | VEP56021A | MAIN C.B.A. | (RTL) |
| | | | |
| | | | |
| ■ | VEP58012A | FLASH TOP C.B.A. | (RTL) |
| | | | |
| | | | |
| ■ | VEK0H65 | CCD UNIT | |
| | | | |
| | | | |
| | | | |
| | | --- INDIVIDUAL PARTS --- | |
| C8003 | F2A2F1010004 | E.CAPACITOR 300V 100U | |
| L8001 | G5FYA0000004 | TRANSFORMER | |
| | | | |
| | | | |
| | | | |
| | | --- ELEC. COMPONENTS --- | |
| ■ | VEP56021A | MAIN C.B.A. | (RTL) |
| | | | |
| | | MISCELLANEOUS | |
| Z9101 | ML-614S/ZT | BATTERY | [MBI] |
| | | | |
| | | | |
| | | | |
| ■ | VEP58012A | FLASH TOP C.B.A. | (RTL) |
| | | | |
| C8001 | ECJ1VB0J105K | C.CAPACITOR CH 6.3V 1U | |
| C8002 | F1K2J333A013 | C.CAPACITOR 630V 0.033U | |
| C8004 | F1K2J102A010 | C.CAPACITOR 630V 1000P | |
| C8005 | F1J0J1060010 | C.CAPACITOR CH 6.3V 10U | |
| C8006 | F1L2E333A002 | C.CAPACITOR CH 250V0.033U | |
| C8008 | F1J0J1060010 | C.CAPACITOR CH 6.3V 10U | |
| C8010 | F1J0J1060010 | C.CAPACITOR CH 6.3V 10U | |
| | | | |
| D8002 | B0HCMP000006 | DIODE | |
| D8003 | B0HCGR000004 | DIODE | |
| D8004 | B0HCGR000004 | DIODE | |
| | | | |
| IC8001 | C0ZBZ0001011 | IC | |
| | | | |
| PS8001 | K1KB30AA0116 | CONNECTOR 30P | |
| | | | |
| Q8001 | B1JBLP000008 | TRANSISTOR | |
| Q8002 | B1DFGC000003 | TRANSISTOR | |
| Q8009 | B1DFCG000010 | TRANSISTOR | |
| | | | |
| R8001 | ERJ3GEYJ242 | M.RESISTOR CH 1/10W 2.4K | |
| R8003 | ERJ6GEY0R00V | M.RESISTOR CH 1/10W 0 | D0GBR00JA017 |
| R8004 | ERJ2GEJ680 | M.RESISTOR CH 1/16W 68 | ERJ2RMJ680X |
| R8006 | ERJ8GEYJ105V | M.RESISTOR CH 1/8W 1M | |



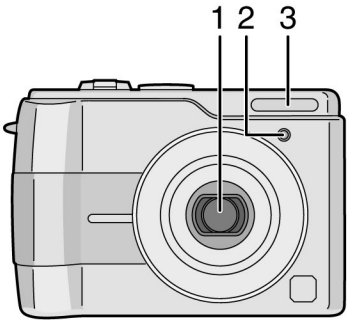
PDF created with pdfFactory Pro trial version www.pdffactory.com

| Ref. No. | Part No. | Part Name & Description | Remarks |
|---|---|---|---|
| R8008 | ERJ2GEJ432X | M.RESISTOR CH 1/16W 4.3K | |
| R8009 | ERJ2GEJ822 | M.RESISTOR CH 1/16W 8.2K | |
| R8010 | ERJ2GEJ822 | M.RESISTOR CH 1/16W 8.2K | |
| R8011 | ERJ2GEJ432X | M.RESISTOR CH 1/16W 4.3K | |
| R8012 | ERJ2GEJ242 | M.RESISTOR CH 1/16W 2.4K | |
| R8013 | ERJ2RHD153X | M.RESISTOR CH 1/16W 15K | |
| R8021 | ERJ2GEJ104 | M.RESISTOR CH 1/16W 100K | |
| R8032 | ERJ6RED105 | M.RESISTOR CH 1/16W 1M | |
| R8033 | ERJ6RED105 | M.RESISTOR CH 1/16W 1M | |
| | | | |
| S8001 | K0F212A00001 | SWITCH | |
| S8002 | VSS0534 | SWITCH | K0D112B00071 |
| S8003 | ESE23F101 | SWITCH | |
| S8004 | K0F111A00472 | SWITCH | |
| S8005 | K0G188A00002 | SWITCH | |
| | | | |
| T8001 | G5DYA0000100 | TRANSFORMER | |
| | | | |
| | | | |
| | | | |
| ■ | VEK0H65 | CCD UNIT | |
| | | | |
| C3101 | ECJ2YB1A105K | C.CAPACITOR CH 10V 1U | |
| C3103 | ECJ3VF1C225Z | C.CAPACITOR CH 16V 2.2U | |
| C3104 | ECJ0EB1C103K | C.CAPACITOR CH 16V 0.01U | |
| Q3102 | 2SC4627JCL | TRANSISTOR NPN | |
| | | | |
| R3101 | ERJ2RKD330 | M.RESISTOR CH 1/16W 33 | |
| R3102 | ERJ2GEJ222 | M.RESISTOR CH 1/16W 2.2K | |
| R3105 | ERJ2GE0R00X | M.RESISTOR CH 1/16W 0 | |
| R3108 | ERJ2GEJ105 | M.RESISTOR CH 1/16W 1M | |

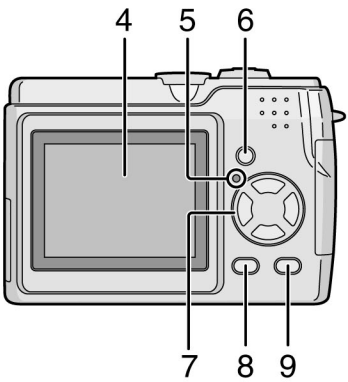
# 15. SCHEMATIC DIAGRAM FOR PRINTING WITH A4 SIZE



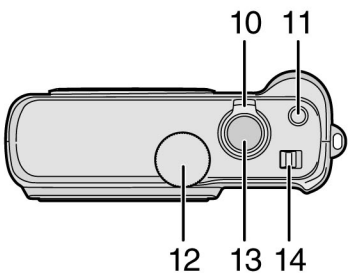
PDF created with pdfFactory Pro trial version www.pdffactory.com



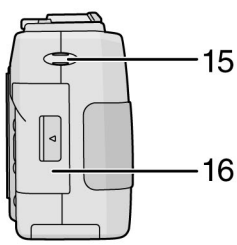

1 Lens
2 Self-timer Indicator
3 Flash



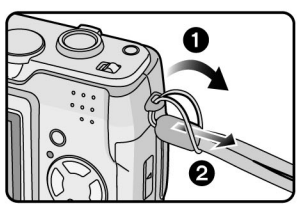

4 LCD Monitor
5 Status Indicator
6 [DISPLAY] Button
7 Cursor Buttons
◄/Self-timer Button
▼/[REV] Button
►/Flash Setting Button
▲/Exposure Compensation /Auto Bracket /White Balance Fine Adjustment /Backlight Compensation in Simple Mode Button
8 [MENU] Button
9 Single or Burst Mode /Delete Button



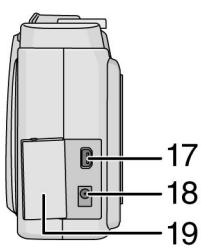

10 Zoom Lever
11 Optical Image Stabilizer Button
12 Mode Dial
13 Shutter Button
14 Camera ON/OFF Switch



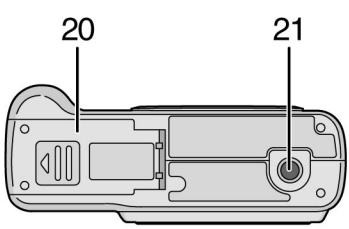

15 Strap Eyelet



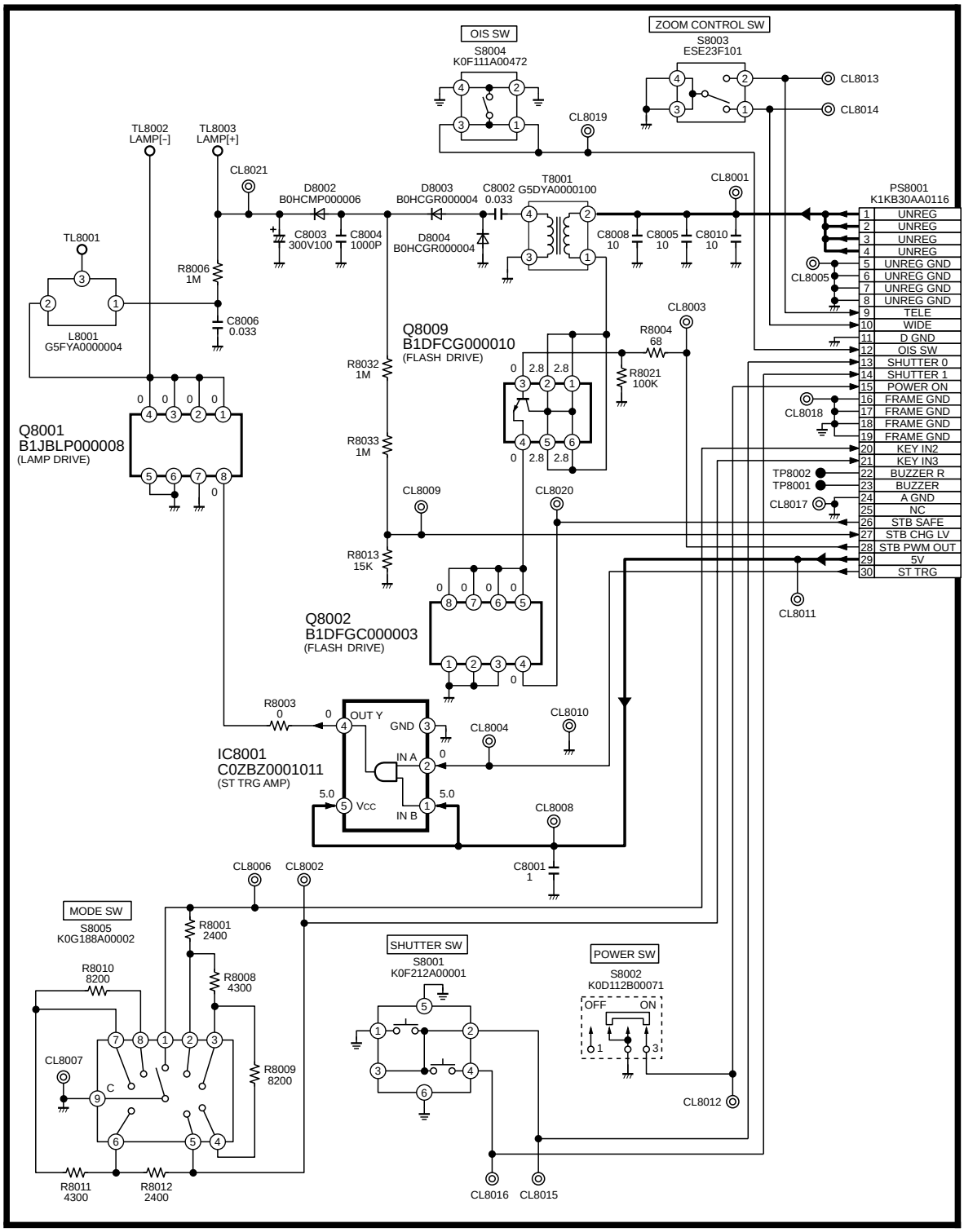

16 Card Door




17 [DIGITAL/V.OUT] Socket
18 [DC IN] Socket
• Please be sure to use genuine Panasonic AC adaptor (DMW-AC1; optional).
19 Terminal Door




20 Battery Door
21 Tripod Receptacle
• When you use a tripod, make sure the tripod is stable with the camera attached to it.






**NOTE: (When Replacing)**

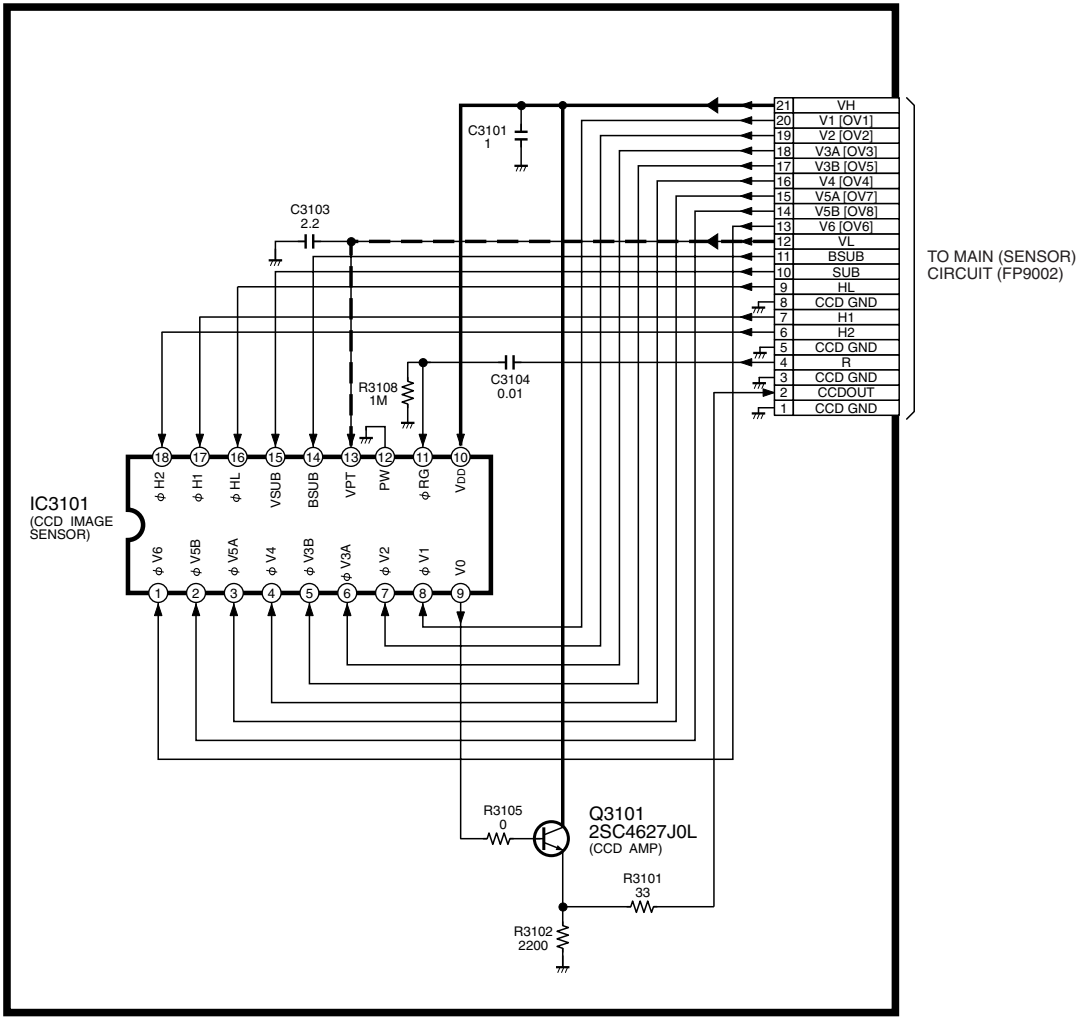
The following component are not mounted on the Flash Top C.B.A. which is supplied as a replacement.

Be sure to put the following component when replacing the Flash Top C.B.A. as a unit.

Ref No. L8001 (Transformer), Ref No. C8003 (E. capacitor)

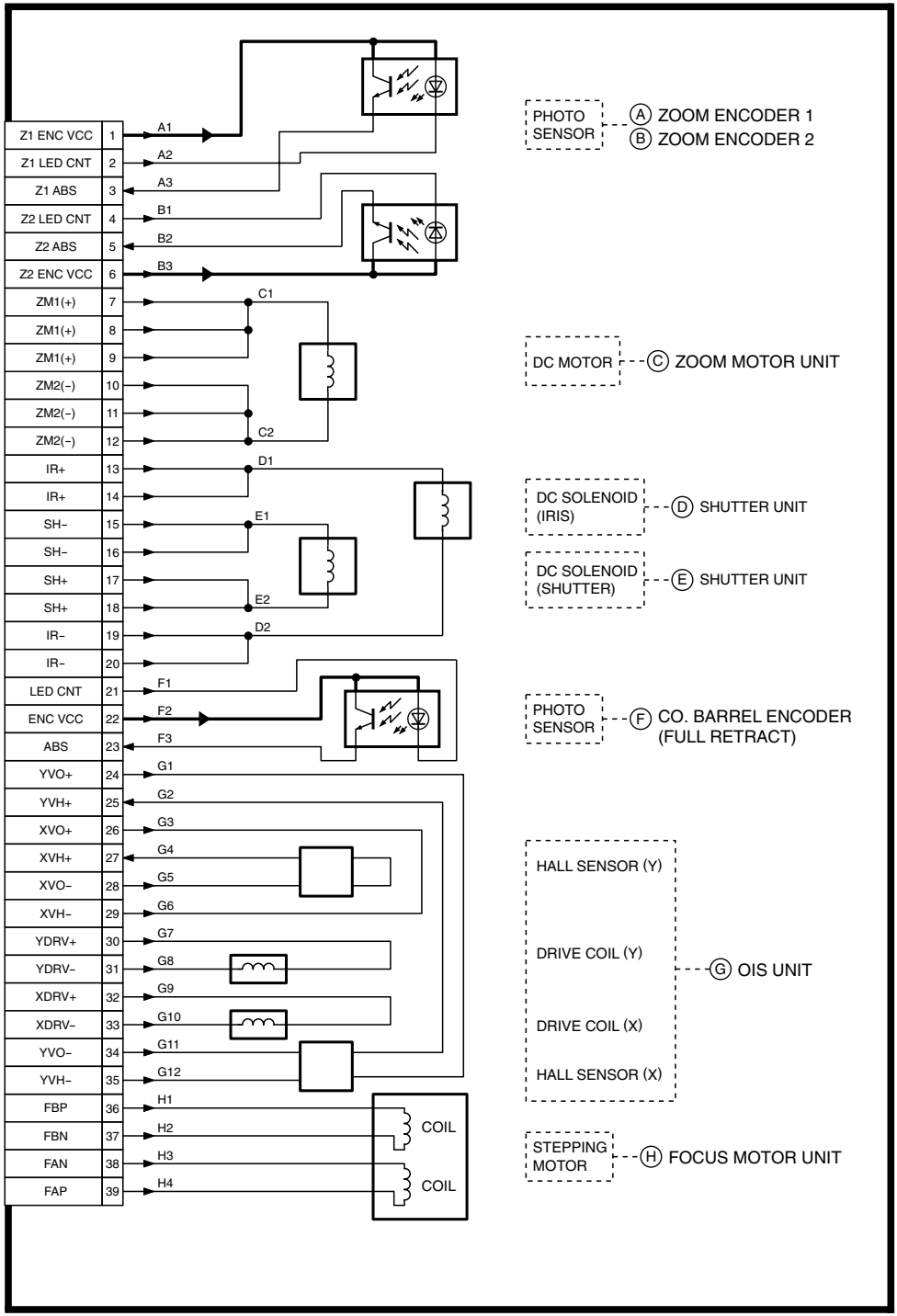
## CCD SCHEMATIC DIAGRAM

: POSITIVE VOLTAGE LINE  : NEGATIVE VOLTAGE LINE



## LENS FLEX SCHEMATIC DIAGRAM

: POSITIVE VOLTAGE LINE



FLASH TOP C.B.A.
(COMPONENT SIDE)

PS8001

| | | | |
|---|---|---|---|
| 1 | UNREG | ST TRG | 30 |
| 2 | UNREG | 5V | 28 |
| 3 | UNREG | STB PWM OUT | 27 |
| 4 | UNREG | STB CHG LV | 26 |
| 5 | UNREG GND | STB SAFE | 25 |
| 6 | UNREG GND | NC | 24 |
| 7 | UNREG GND | A GND | 23 |
| 8 | UNREG GND | BUZZER | 22 |
| 9 | TELE | BUZZER R | 21 |
| 10 | WIDE | KEY IN3 | 20 |
| 11 | D GND | KEY IN2 | 19 |
| 12 | OIS SW | FRAME GND | 18 |
| 13 | SHUTTER 0 | FRAME GND | 17 |
| 14 | SHUTTER 1 | FRAME GND | 16 |
| 15 | POWER ON | FRAME GND | |

PP9001

| | | | |
|---|---|---|---|
| 1 | UNREG | ST TRG | 30 |
| 2 | UNREG | 5R0V | 29 |
| 3 | UNREG | STB PWM OUT | 28 |
| 4 | UNREG | STB CHG LV | 27 |
| 5 | UNREG GND | STB SAFE | 26 |
| 6 | UNREG GND | NC | 25 |
| 7 | UNREG GND | A GND | 24 |
| 8 | UNREG GND | BUZZER | 23 |
| 9 | TELE | BUZZER R | 22 |
| 10 | WIDE | KEY IN3 | 21 |
| 11 | D GND | KEY IN2 | 20 |
| 12 | OIS SW | FRAME GND | 19 |
| 13 | SHUTTER 0 | FRAME GND | 18 |
| 14 | SHUTTER 1 | FRAME GND | 17 |
| 15 | POWER ON | FRAME GND | 16 |

FP9002

| | | |
|---|---|---|
| 1 | VH | |
| 2 | V1 [OV1] | |
| 3 | V2 [OV2] | |
| 4 | V3/V3A [OV3] | |
| 5 | V6/V3B [OV5] | |
| 6 | V4 [OV4] | |
| 7 | V5A [OV7] | |
| 8 | V5B [OV8] | |
| 9 | V6 [OV6] | |
| 10 | VL | |
| 11 | BSUB | |
| 12 | SUB | |
| 13 | HL | |
| 14 | CCD GND | |
| 15 | H1 | |
| 16 | H2 | |
| 17 | CCD GND | |
| 18 | R | |
| 19 | GUARD1 | |
| 20 | CCDOUT | |
| 21 | GUARD1 | |

FP9003

| | | | |
|---|---|---|---|
| 33 | VCOM | VSS | 1 |
| 31 | TEST | COMOUT | 3 |
| 29 | BLON | C1- | 5 |
| 27 | DI | C2- | 7 |
| 25 | VSYNC | VDC1 | 9 |
| 23 | CLK | VDD | 11 |
| 21 | D04 | VSH | 13 |
| 19 | D02 | NC | 15 |
| 17 | D00 | VBC | 16 |
| 15 | NC | COMDC | 14 |
| 13 | VSH | VGH | 12 |
| 11 | VDD | C2+ | 10 |
| 9 | VDC1 | VGL | 8 |
| 7 | C2- | C1+ | 6 |
| 5 | C1- | VVCOM | 4 |
| 3 | COMOUT | | 2 |
| 1 | VSS | | |

| | | | |
|---|---|---|---|
| 32 | VSS | | |
| 30 | POCB | | |
| 28 | CS | | |
| 26 | SCK | | |
| 24 | HSYNC | | |
| 22 | D05 | | |
| 20 | D03 | | |
| 18 | D01 | | |
| 16 | NC | | |
| 14 | VBC | | |
| 12 | COMDC | | |
| 10 | VGH | | |
| 8 | C2+ | | |
| 6 | VGL | | |
| 4 | C1+ | | |
| 2 | VVCOM | | |

FP9001

| | | | |
|---|---|---|---|
| 1 | Z1 ENC VCC | Z1 LEDCNT | 2 |
| 3 | Z1ABS | Z2 LEDCNT | 4 |
| 5 | Z2ABS | Z2 ENC VCC | 6 |
| 7 | ZM1 | ZM1 | 8 |
| 9 | ZM1 | ZM2 | 10 |
| 11 | ZM2 | ZM2 | 12 |
| 13 | IRIS1 | IRIS1 | 14 |
| 15 | SHUT2 | SHUT2 | 16 |
| 17 | SHUT1 | SHUTT | 18 |
| 19 | IRIS2 | IRIS2 | 20 |
| 21 | F LEDCNT | FENC VCC | 22 |
| 23 | FABS | Y VO+ | 24 |
| 25 | Y VH+ | X VO+ | 26 |
| 27 | X VH+ | Y VO- | 28 |
| 29 | X VH- | Y DRV+ | 30 |
| 31 | Y DRV- | X DRV+ | 32 |
| 33 | X DRV- | X VO- | 34 |
| 35 | Y VH- | FBP | 36 |
| 37 | FBN | FAN | 38 |
| 39 | FAP | | |

P9001

| | |
|---|---|
| 2 | BLL |
| 1 | BLH |

MAIN C.B.A.
(FOIL SIDE)

※ : (COMPONENT SIDE)

LENS UNIT

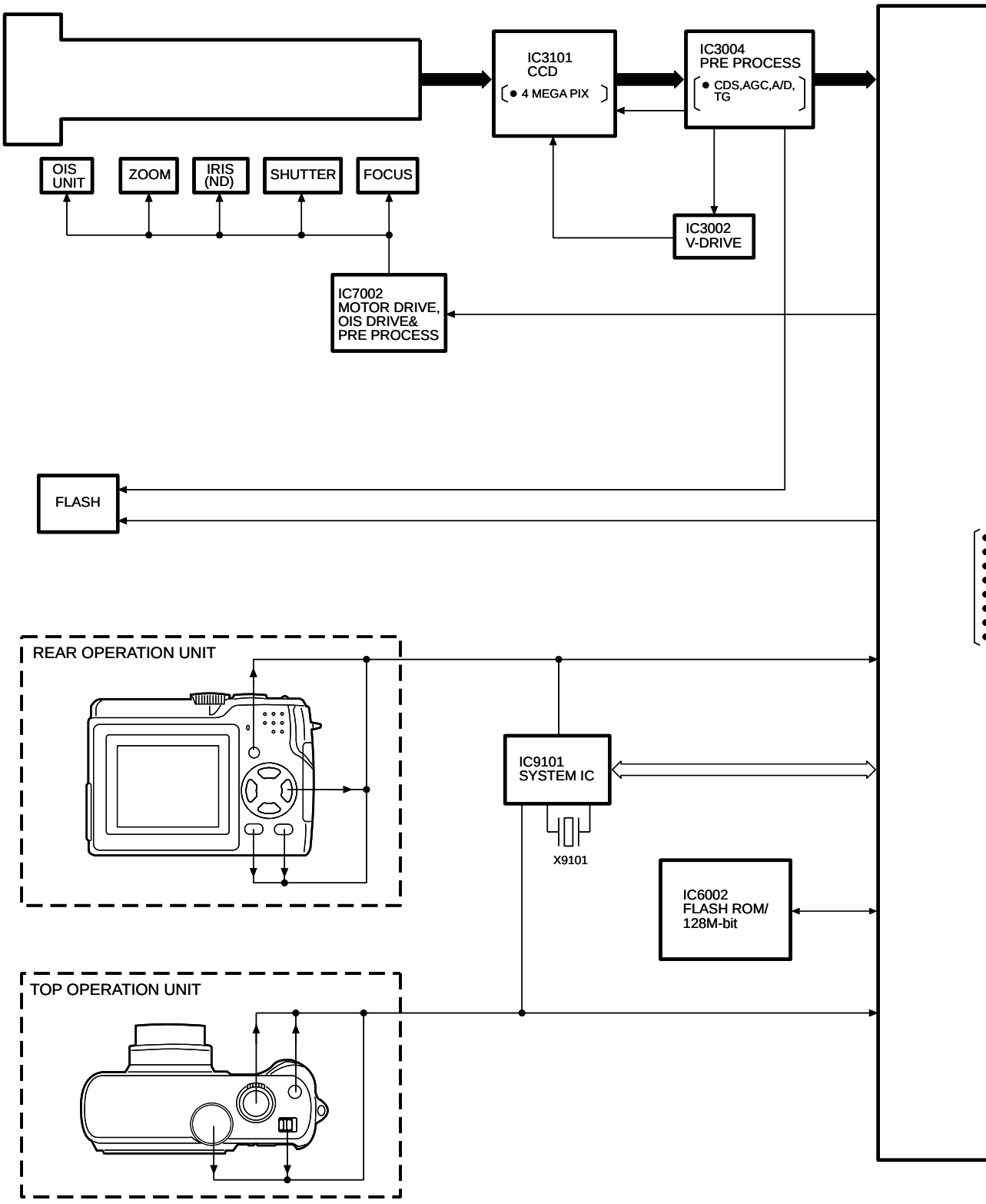
CCD UNIT

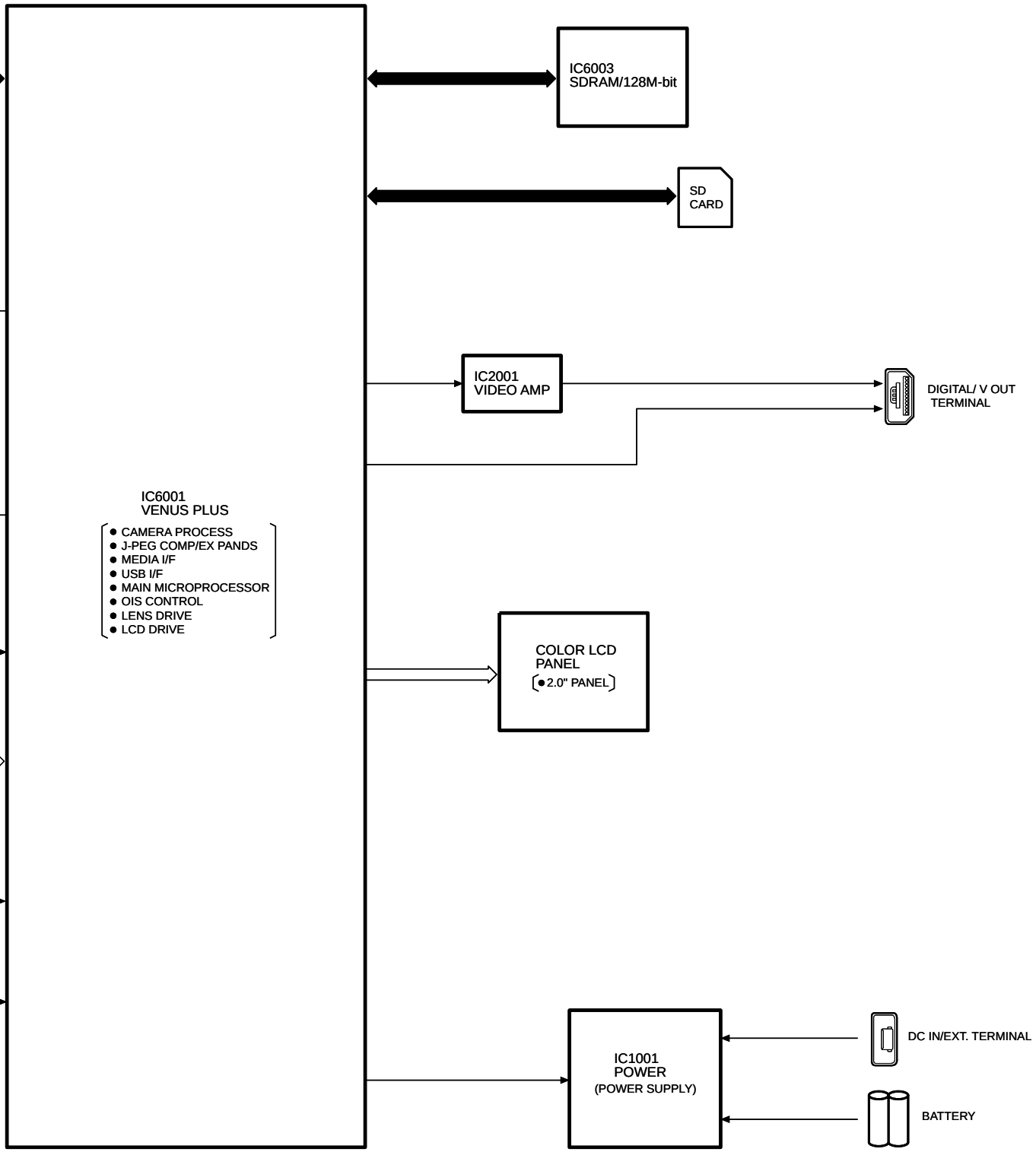
LCD UNIT

# 11 SCHEMATIC DIAGRAMS

## 11.1. OVERALL BLOCK DIAGRAM

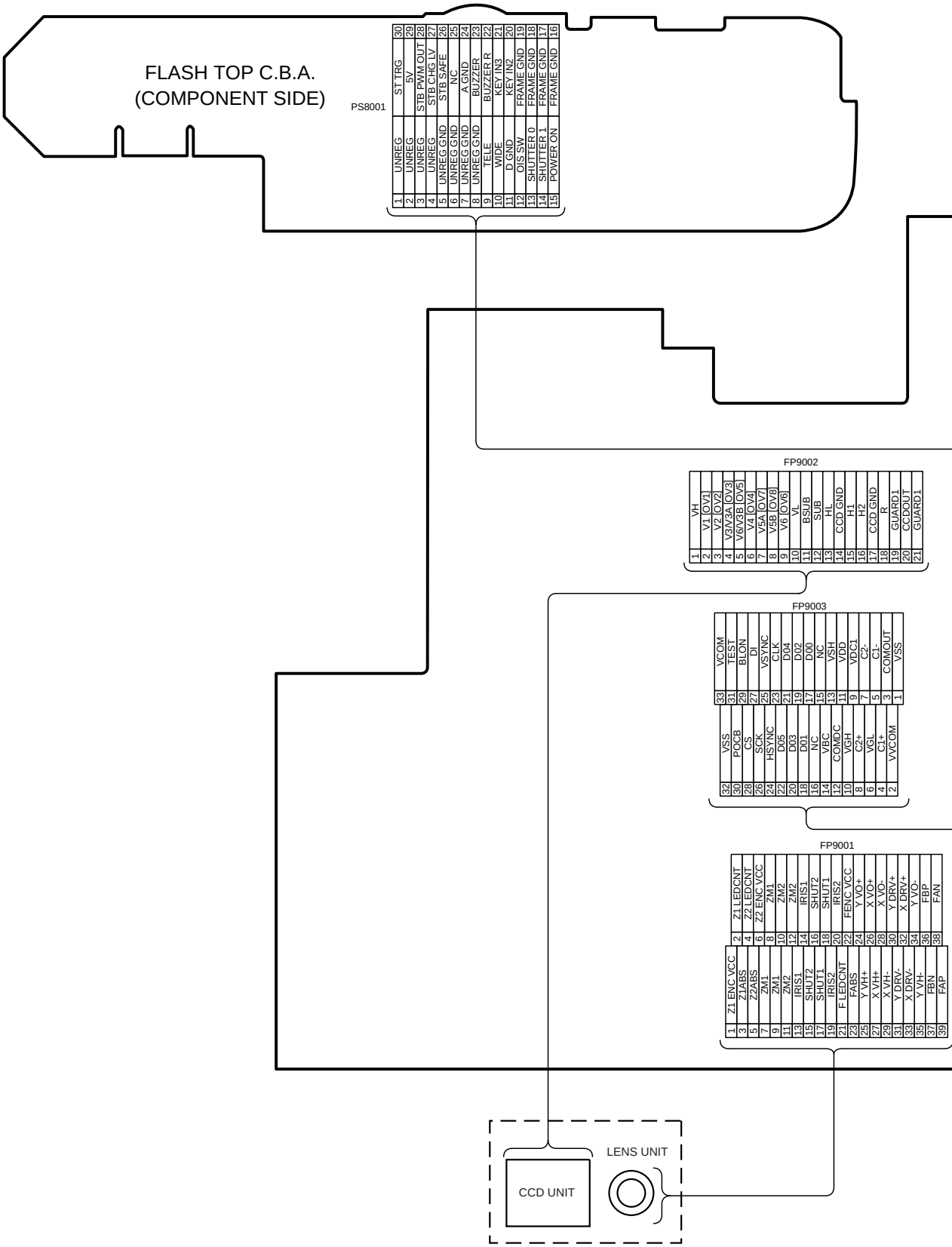
◆ OVERALL BLOCK DIAGRAM

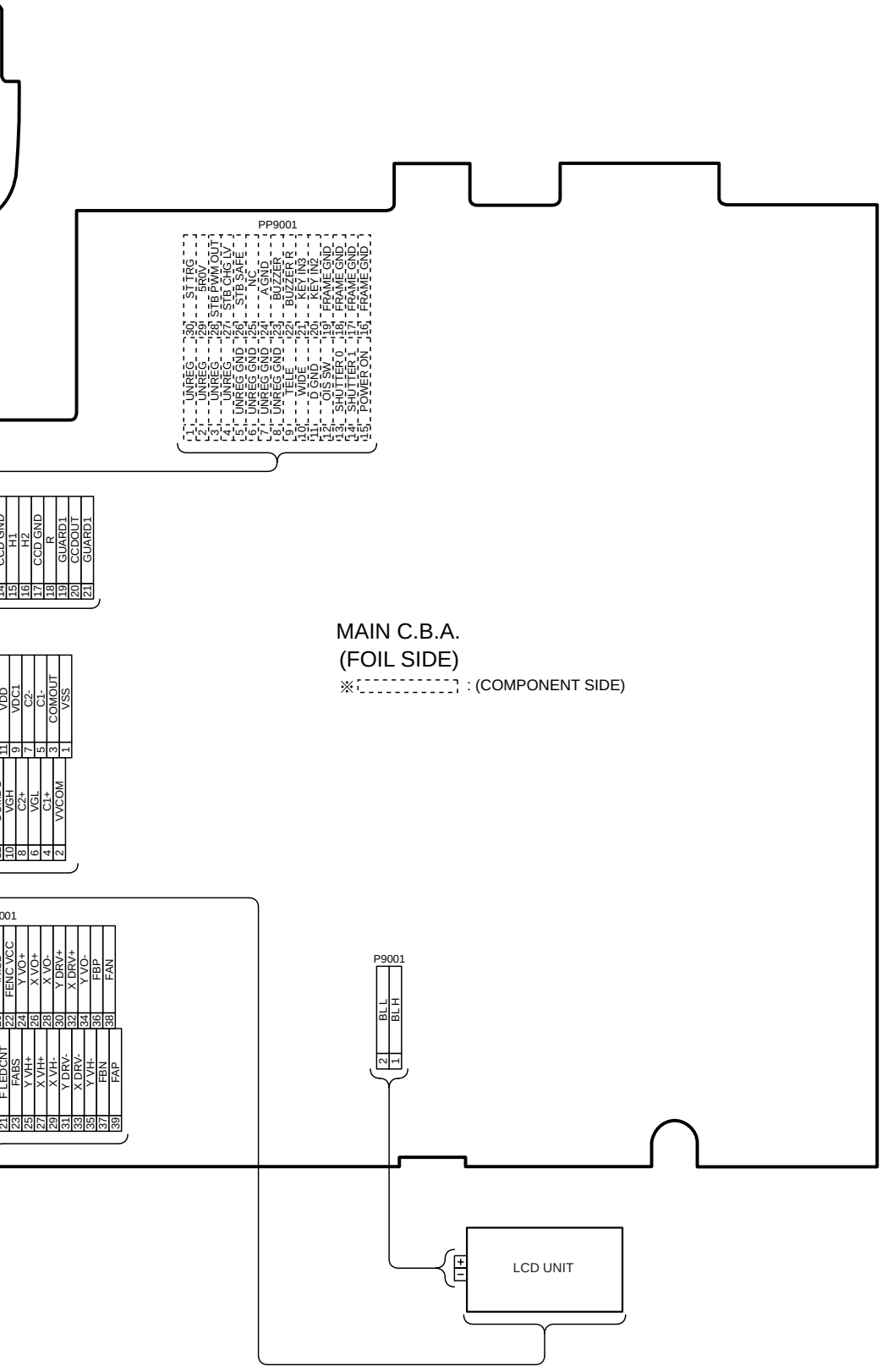





DMC-LS1PP/PL/EB/EG/EGM/GC/GK/GN/GT/SG OVERALL BLOCK DIAGRAM

## 11.2. WIRING CONNECTION DIAGRAM





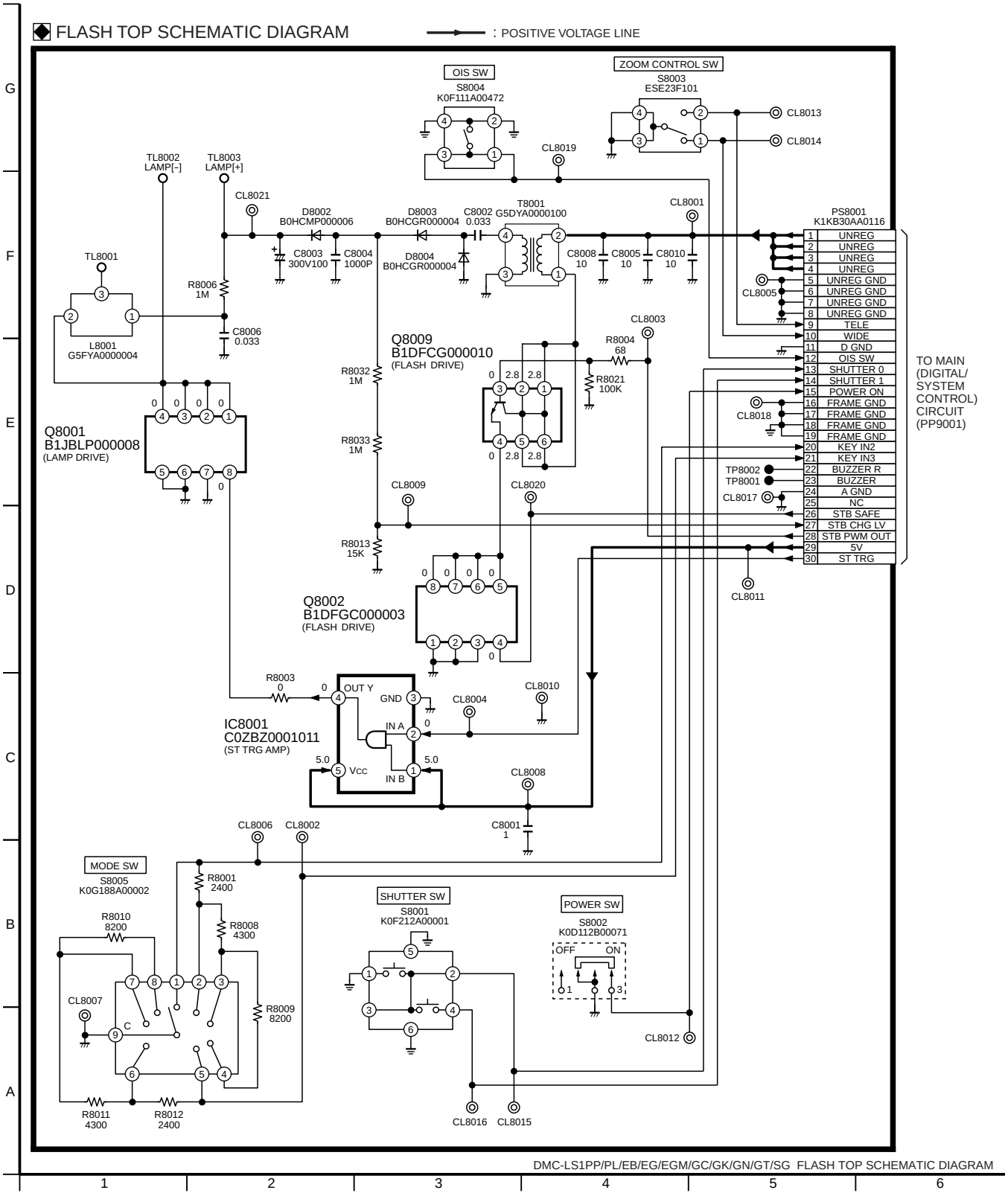

MAIN C.B.A.
(FOIL SIDE)

※ : (COMPONENT SIDE)

DMC-LS1PP/PL/EB/EG/EGM/GC/GK/GN/GT/SG WIRING CONNECTION DIAGRAM

# 11.3. FLASH TOP SCHEMATIC DIAGRAM



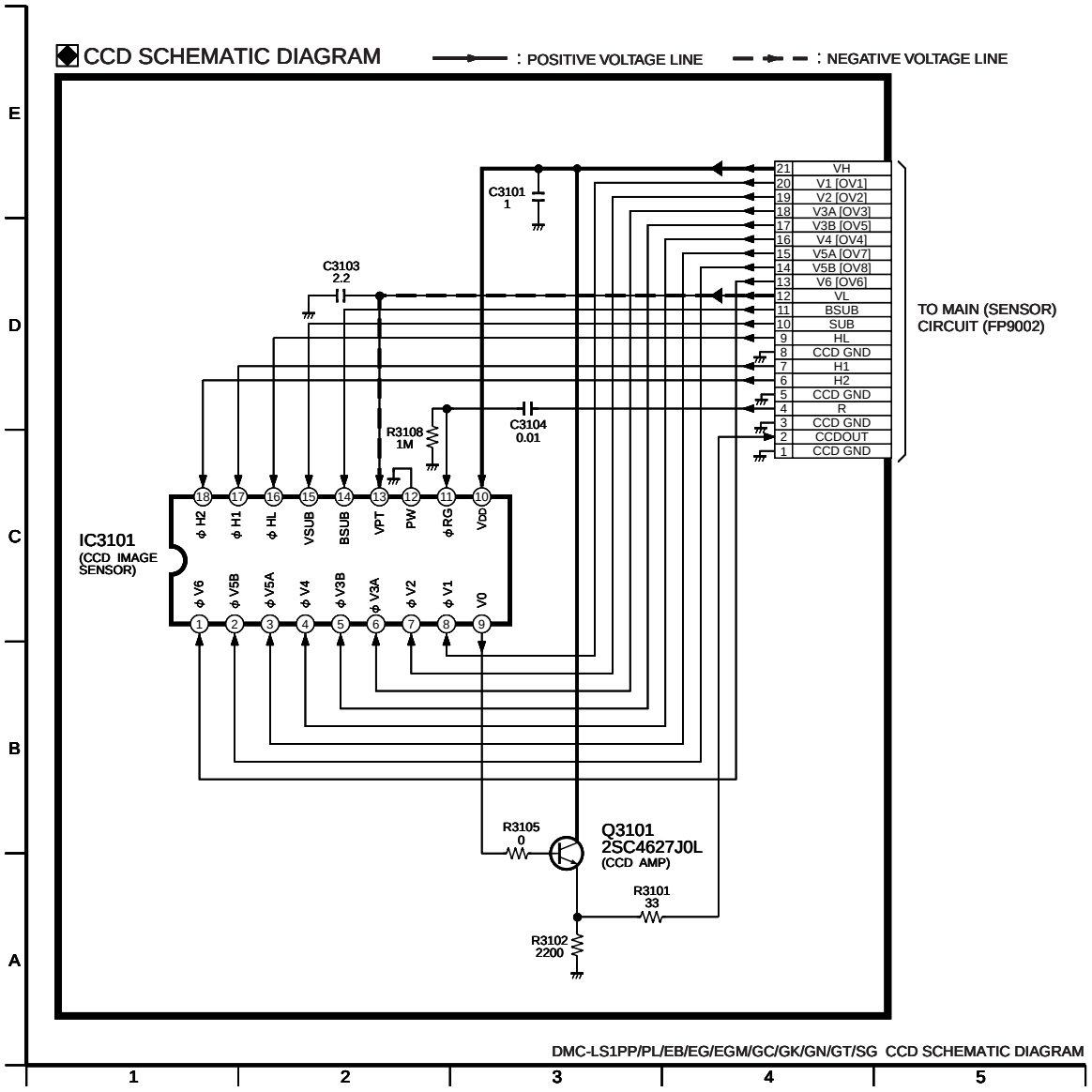



DMC-LS1PP/PL/EB/EG/EGM/GC/GK/GN/GT/SG FLASH TOP SCHEMATIC DIAGRAM

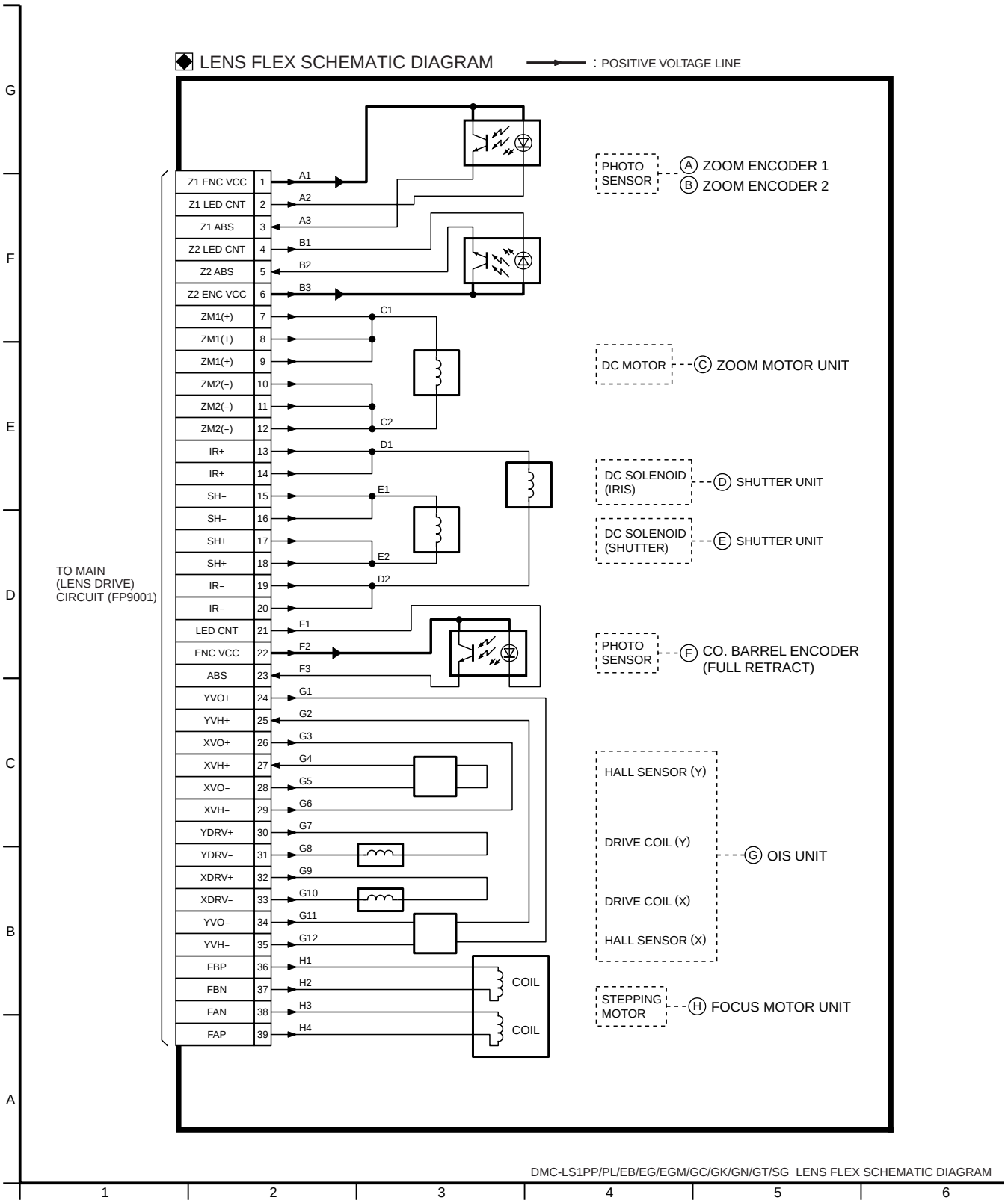
**NOTE: (When Replacing)**

The following component are not mounted on the Flash Top C.B.A. which is supplied as a replacement.
Be sure to put the following component when replacing the Flash Top C.B.A. as a unit.
Ref No. L8001 (Transformer), Ref No. C8003 (E. capacitor)

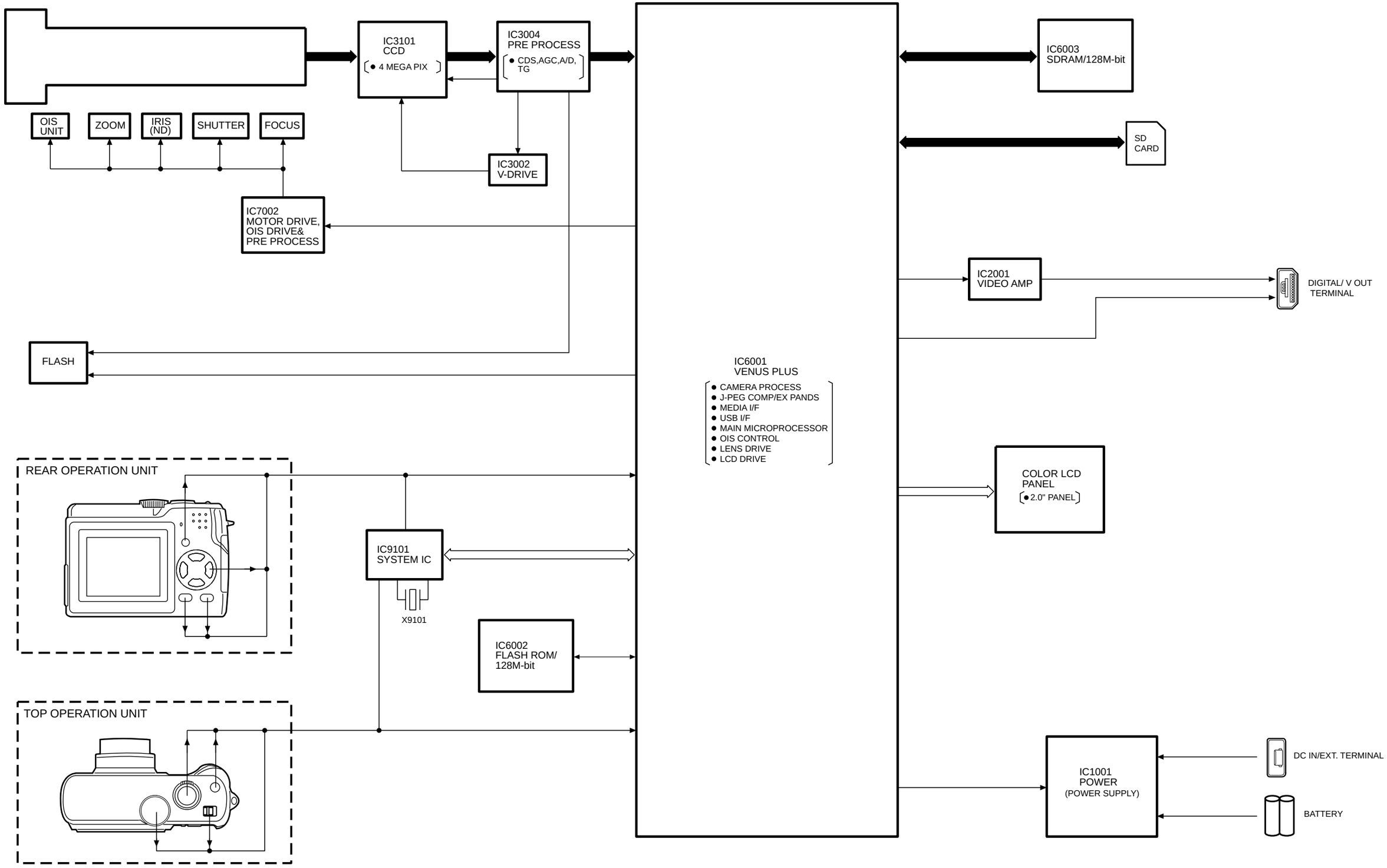
# 11.4. CCD SCHEMATIC DIAGRAM



# 11.5. LENS FLEX SCHEMATIC DIAGRAM

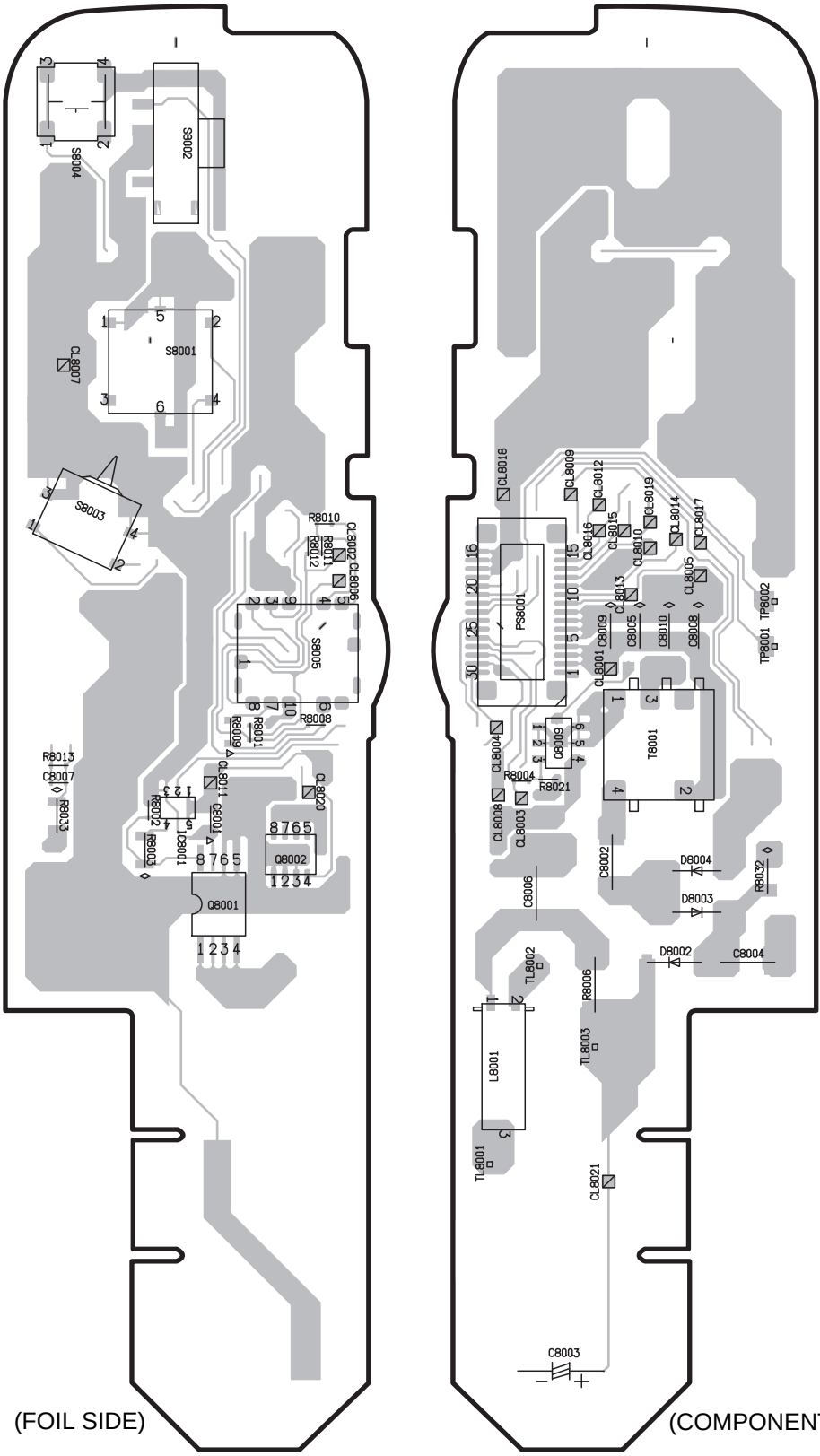


# OVERALL BLOCK DIAGRAM



**NOTE: (When Replacing)**

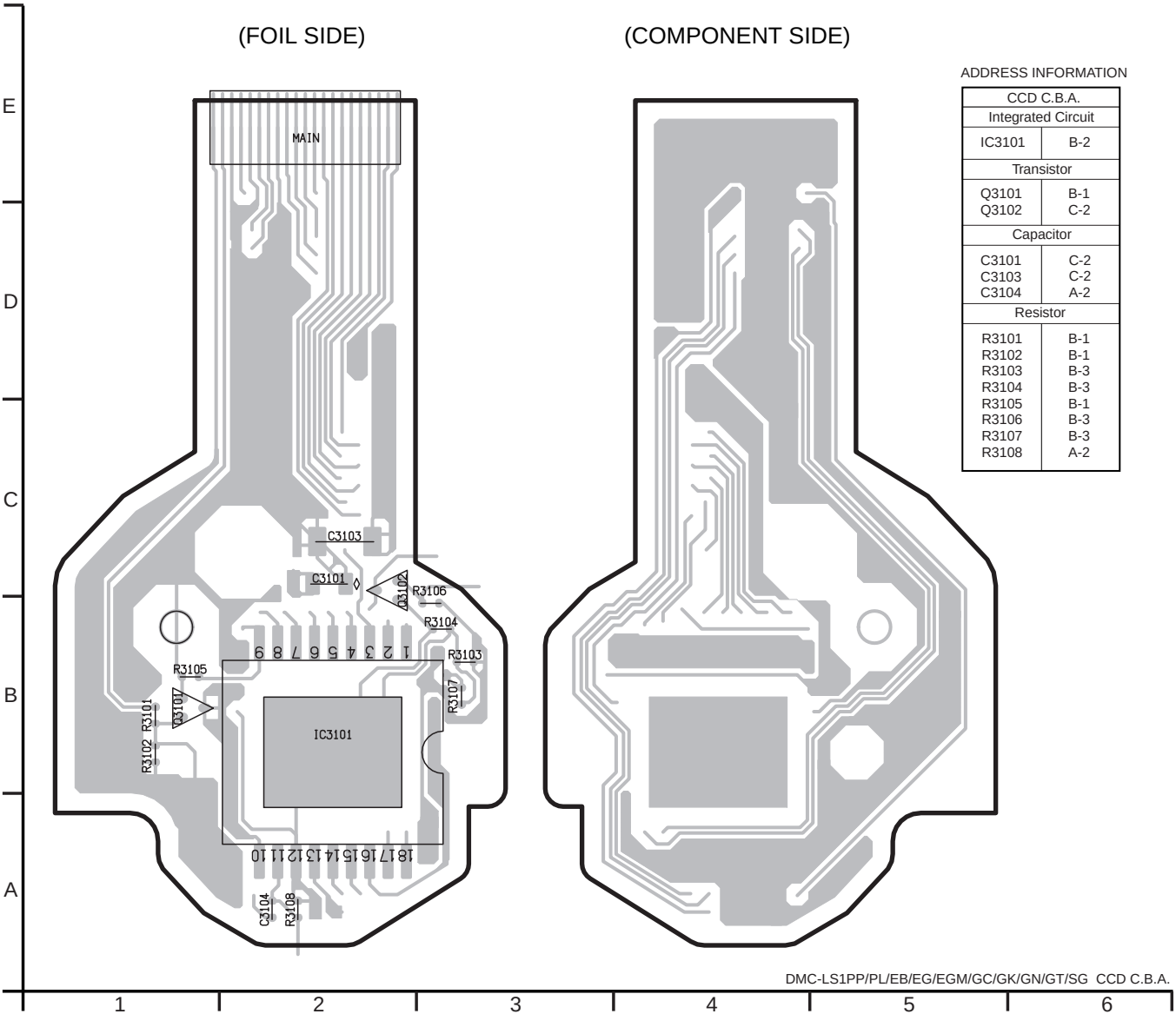
The following component are not mounted on the Flash Top C.B.A. which is supplied as a replacement.
Be sure to put the following component when replacing the Flash Top C.B.A. as a unit.
Ref No. L8001 (Transformer), Ref No. C8003 (E. capacitor)




ADDRESS INFORMATION

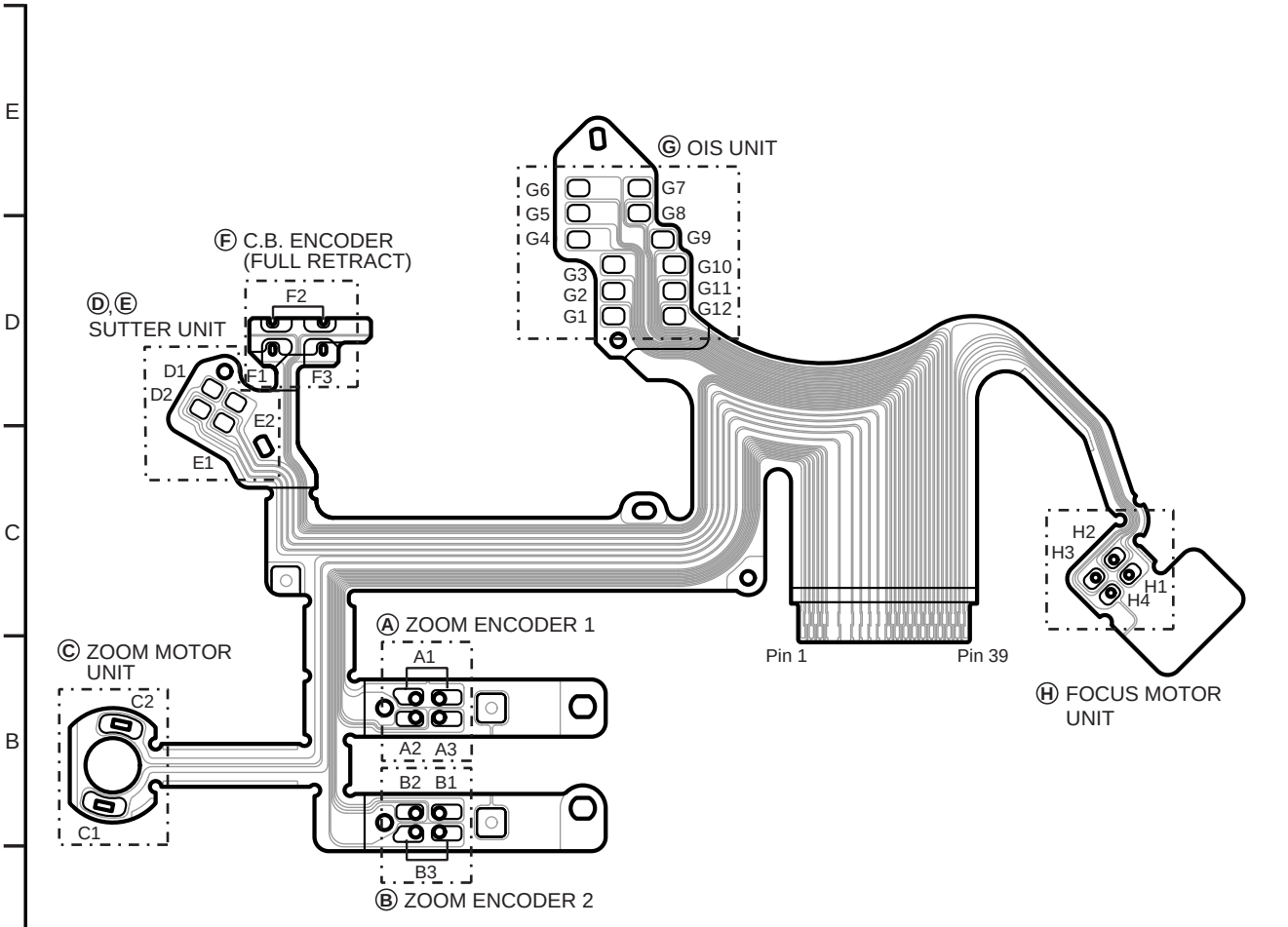
| FLASH TOP C.B.A. | | |
|---|---|---|
| **Integrated Circuit** | | |
| IC8001 | D-2 | F |
| **Transistor** | | |
| Q8001 | C-2 | F |
| Q8002 | D-2 | F |
| Q8009 | D-3 | C |
| **Test Point** | | |
| CL8001 | E-4 | C |
| CL8002 | E-2 | F |
| CL8003 | D-3 | C |
| CL8004 | D-3 | C |
| CL8005 | E-5 | C |
| CL8006 | E-2 | F |
| CL8007 | F-1 | F |
| CL8008 | D-3 | C |
| CL8009 | F-4 | C |
| CL8010 | E-4 | C |
| CL8011 | D-2 | F |
| CL8012 | F-4 | C |
| CL8013 | E-4 | C |
| CL8014 | E-4 | C |
| CL8015 | E-4 | C |
| CL8016 | E-4 | C |
| CL8017 | E-4 | C |
| CL8018 | F-3 | C |
| CL8019 | E-4 | C |
| CL8020 | D-2 | F |
| CL8021 | B-4 | C |
| TL8001 | B-3 | C |
| TL8002 | C-3 | C |
| TL8003 | C-4 | C |
| TP8001 | E-5 | C |
| TP8002 | E-5 | C |
| **Connector** | | |
| PS8001 | E-3 | C |
| **Diode** | | |
| D8002 | C-4 | C |
| D8003 | C-5 | C |
| D8004 | D-5 | C |
| **Transformer** | | |
| T8001 | D-4 | C |
| **Coil** | | |
| L8001 | C-3 | C |
| **Switch** | | |
| S8001 | F-2 | F |
| S8002 | G-2 | F |
| S8003 | E-1 | F |
| S8004 | G-1 | F |
| S8005 | E-2 | F |
| **Capacitor** | | |
| C8001 | D-2 | F |
| C8002 | D-4 | C |
| C8003 | A-4 | C |
| C8004 | C-4 | C |
| C8005 | E-4 | C |
| C8006 | C-3 | C |
| C8007 | D-1 | F |
| C8008 | E-4 | C |
| C8009 | E-4 | C |
| C8010 | E-4 | C |
| **Resistor** | | |
| R8001 | D-2 | F |
| R8002 | D-1 | F |
| R8003 | D-1 | F |
| R8004 | D-3 | C |
| R8006 | C-4 | C |
| R8008 | D-2 | F |
| R8009 | D-2 | F |
| R8010 | E-2 | F |
| R8011 | E-2 | F |
| R8012 | E-2 | F |
| R8013 | D-1 | F |
| R8021 | D-3 | C |
| R8032 | D-5 | C |
| R8033 | D-1 | F |

C · · · COMPONENT SIDE
F · · · FOIL SIDE



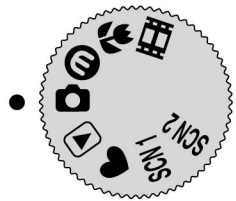

ADDRESS INFORMATION

| CCD C.B.A. | |
|---|---|
| Integrated Circuit | |
| IC3101 | B-2 |
| Transistor | |
| Q3101 | B-1 |
| Q3102 | C-2 |
| Capacitor | |
| C3101 | C-2 |
| C3103 | C-2 |
| C3104 | A-2 |
| Resistor | |
| R3101 | B-1 |
| R3102 | B-1 |
| R3103 | B-3 |
| R3104 | B-3 |
| R3105 | B-1 |
| R3106 | B-3 |
| R3107 | B-3 |
| R3108 | A-2 |


Ⓖ OIS UNIT
G6
G5
G4
G7
G8
G9
G3
G2
G1
G10
G11
G12
Ⓕ C.B. ENCODER
(FULL RETRACT)
F2
F1
F3
Ⓓ,Ⓔ
SUTTER UNIT
D1
D2
E2
E1
Ⓐ ZOOM ENCODER 1
A1
A2
A3
Ⓒ ZOOM MOTOR
UNIT
C2
C1
B2
B1
B3
Ⓑ ZOOM ENCODER 2
Pin 1
Pin 39
H2
H3
H1
H4
Ⓗ FOCUS MOTOR
UNIT

■ **The Mode Dial**

This camera has a mode dial to suit recording of many kinds of scenes.
Select the desired mode and enjoy the variety of recording.
The mode dial can be rotated 360°. Rotate it slowly and securely to adjust to each mode.
(Do not adjust the mode dial to the space between the marks of modes.)




**: Normal picture mode**
Use this mode for usual recording.

**: Economy mode**
This mode allows you to take pictures reducing the battery power consumption.

**: Macro mode**
This mode allows you to take a picture closely focusing on the subject.

**: Motion image mode**
This mode allows you to record motion images.

**SCN1 : Scene mode 1**
**SCN2 : Scene mode 2**
This mode allows you to take pictures depending on the recording scenes.
This mode also allows you to set [SCENE MENU] on the [SETUP] menu to [OFF] and set the scene modes which are frequently used to [SCN1] and [SCN2] on the mode dial.
It is convenient because you can select the scene mode quickly and minimize the operation.

**: Simple mode**
This is the recommended mode for beginners.

**: Playback mode**
This mode allows you to play back recorded pictures.